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A Comparison of Soviet and US Defense Activities, 1972-81 (U)

An Intelligence Assessment

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This paper was prepared by [redacted] Office of Soviet Analysis. Contributions were made by [redacted]. Comments and queries are welcome and [redacted]

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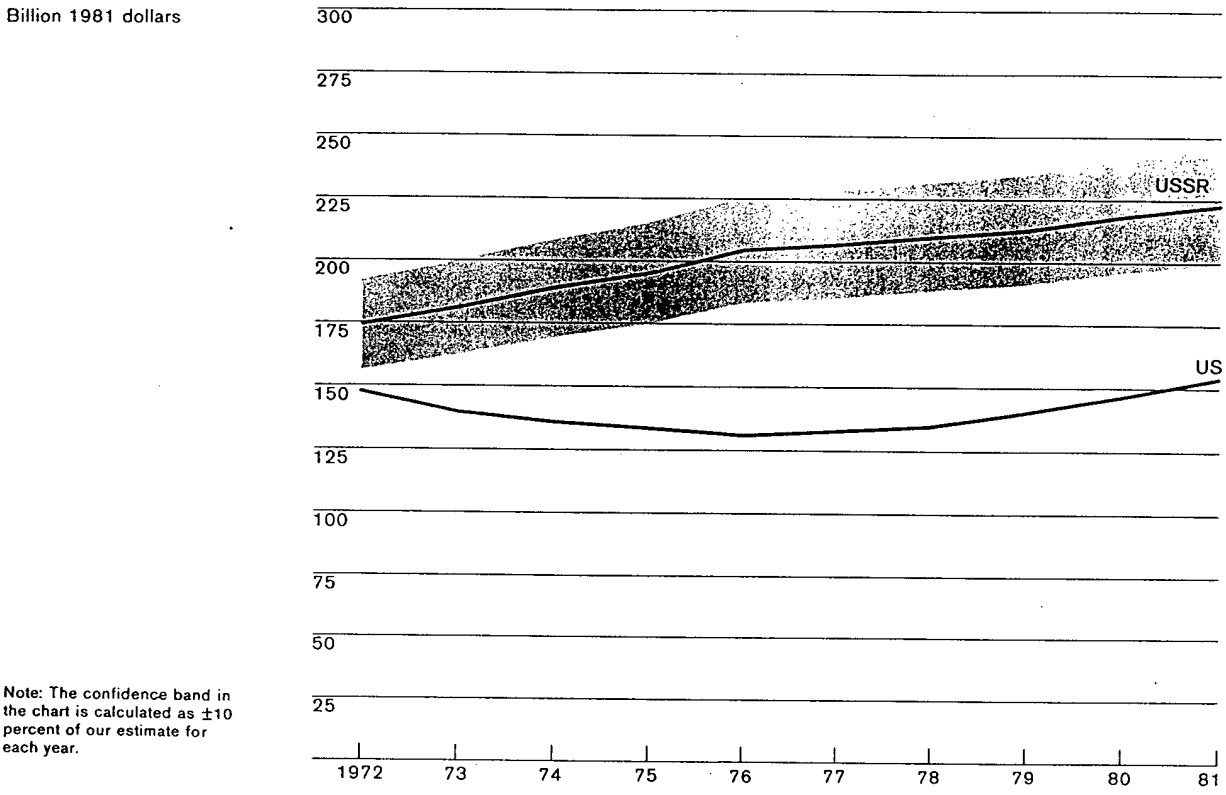
US and Soviet Defense Activities

A comparison of US outlays with estimated dollar costs of Soviet activities



Note: The confidence band in the chart is calculated as ±10 percent of our estimate for each year.

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A Comparison of Soviet and US Defense Activities, 1972-81

Key Judgments

Total Defense Program

For the 1972-81 period, the estimated cumulative dollar costs of Soviet defense activities—that is, the cost of reproducing them in the United States—exceeded US defense outlays by about 45 percent. The estimated dollar costs of Soviet programs in 1981 were $222 billion, or 45 percent more than the comparable US outlays of $154 billion.

The dollar costs of Soviet defense activities grew at an average annual rate of nearly 3 percent over the 1972-81 period. In contrast, US outlays grew very little over the period as a whole. Furthermore, the growth patterns of the two countries were dissimilar:

- The dollar costs of Soviet defense activities (expressed in constant 1981 US prices) grew during the early-to-mid-1970s at an average annual rate of 4 percent; growth occurred in nearly all the major missions and resource categories of the defense establishment. Growth continued after 1976, but at an average rate of less than 2 percent, reflecting a leveling off in investment costs.

- US outlays for defense declined steadily through 1976, then grew at an accelerating rate until the end of the period. Most elements of the US defense establishment reflected this trend.

As a result of these trends, the estimated annual dollar costs of Soviet defense activities exceeded US outlays by a widening margin from 1972 to 1976, when they were 55 percent greater. The difference remained relatively constant until 1979, and the gap has closed somewhat since then.

In sum, the USSR committed substantially more resources (measured in terms of dollar costs) over the period than did the United States. This was true for total defense activities and for almost every component of that total as well. Further, the average growth rates of these Soviet activities from 1972 to 1981 have generally exceeded the corresponding rates for similar US defense activities.

Resource Category Comparisons

The growth in overall dollar costs of Soviet defense activities incorporated growth in all of the major resource categories—investment, operating, and RDT&E (research, development, testing, and evaluation). Although investment showed considerable growth over the period as a whole, these dollar costs leveled off during the 1976-81 period. Outlays for each of the US resource categories show trends similar to those of the US total costs—a decline through the mid-1970s, then increasing growth throughout the rest of the period.

The cumulative dollar costs of Soviet investment for the decade were 80 percent higher than US investment outlays. The estimated dollar costs for the Soviets were more than twice the US outlays in the mid-1970s, but, because of the later leveling off of Soviet programs and growth in US costs, this margin had decreased to 60 percent by 1981. The estimated dollar costs for Soviet RDT&E were 70 percent greater than US RDT&E outlays for the period as a whole and were more than twice as great in 1981. The dollar operating costs for Soviet activities were about 25 percent higher both for the period and in 1981.

Military Mission Comparisons

The dollar costs of the two countries' defense establishments can also be compared in terms of the major missions carried out by different components of the forces. The estimated dollar costs (excluding RDT&E) of Soviet strategic forces for the 1972-81 period were more than three times as large as US strategic outlays. The dollar costs of Soviet general purpose forces—land, tactical air, general purpose naval, and mobility forces—were two-thirds more than comparable US outlays for the period. The dollar costs for Soviet support forces, however, were slightly less than US outlays.

The dollar costs for each major Soviet mission grew over the decade. US outlays for strategic forces, like the US total, fell through the mid-1970s and barely recovered their 1972 level by 1981; only general purpose forces grew substantially.

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A Comparison of Soviet and US Defense Activities, 1972-81

Introduction

Purpose

The goal of this study is to make aggregate comparisons of US and Soviet defense activities. Because the military forces of the two countries are composed of such diverse units, a simple comparison based on numbers of personnel and weapons would not be very useful. It would ignore the differences in design and performance. For example, comparing US and Soviet tactical air forces using only order-of-battle data has limited usefulness. A complete comparison of these two forces would require examination of other activities (training, for instance), which are difficult to measure in physical terms.

One way to summarize such diversity is to assign to each activity some suitable value that captures its relative worth and then to calculate the weighted sum. For defense activities, a weighted value in common use is the cost of the resources devoted to each. These costs can be calculated in any currency, but dollars seem the most logical choice for this paper. In this report all comparisons are made in constant 1981 dollars. Dollars capture both the quantitative and the qualitative dimensions of the forces we are trying to measure.

The use of one nation's currency to measure another nation's activities has practical limitations, however. These limitations and US-USSR comparisons made in rubles are discussed on page 7.

The focus of this paper is the measurement of the annual flow of resources devoted to defense, in terms of dollars. Specifically, this report presents estimates of what it would cost, using prevailing US prices and wages, to produce and man a military force of the same size and with the same weapons as that of the USSR and to operate that force as the Soviets do. We have removed the principal effects of inflation from all costs and outlays by displaying the defense activities of each country in terms of constant dollars.

Definitions

The following US activities and their Soviet counterparts are included in the cost comparisons in this report:

- National Security programs funded by the Department of Defense.
- Defense-related nuclear programs funded by the Department of Energy.
- Selective Service activities.
- The defense-related activities of the Coast Guard.

The following are excluded from the comparisons:

- All costs of military retirement and veterans programs, which reflect payment for past rather than current military activities.[1]
- Soviet space activities that in the United States would be funded by the National Aeronautics and Space Administration.
- Military assistance (except for the pay and allowance of uniformed personnel) and foreign military sales.
- Civil defense programs.
- Soviet Internal Security Troops, who perform police functions, and Soviet Railroad and Construction Troops, who are not directly involved in national security matters.

The physical quantity data for weapon systems contained in this paper are of two types: delivery data, which refer to the quantities of selected weapon systems acquired during a calendar year, and order-of-battle data, which refer to the existing inventory of weapon systems in active units at a given time (the middle of the calendar year for the Soviet Union and the end of the fiscal year for the United States).[2]

Methodology

We develop the dollar costs of all Soviet defense activities except RDT&E by identifying and listing Soviet forces and their support apparatuses. Our model contains a description of over 1,000 distinct defense components—for example: individual classes of surface ships; ground force divisions, divided into categories on the basis of type and readiness level; and air regiments, categorized by aircraft type for each service—and our latest estimates of the order of battle, manning, equipment inventories, and new equipment purchases for each of those components.

To these detailed estimates of physical resources, we apply appropriate US prices and wage rates. This procedure is complex, but in general we do the following:

- *For procurement,* we estimate what it would cost to build the actual Soviet weapons and equipment in the United States at prevailing dollar prices for materials and labor (including overhead and profit), using US production technology and assuming the necessary manufacturing capacity, materials, and labor would be available.

[1] See discussion on page 14.

[2] In 1976 the US fiscal year was changed from a July-June timespan to October-September. Therefore, the end of the fiscal year is 30 June for the 1972-76 period and 30 September thereafter.

- *For operations and maintenance (O&M),* we apply dollar prices to estimates of the labor, materials, spare parts, overhead, and utilities required to operate and maintain equipment the way the Soviets do.

- *For military personnel,* we estimate the military rank of the person in the United States who would be assigned the duties of each Soviet billet and then apply the appropriate US pay and allowance rates to that billet.

The results are then aggregated by military mission and by resource category.

For Soviet RDT&E, on the other hand, we first estimate the cost in rubles. The cost of duplicating that effort in the United States is derived by converting the estimate of aggregate ruble costs into dollars.

US data are in terms of outlays derived from the *Five-Year Defense Program* (FYDP) issued by the Department of Defense in February 1982 and from the US budget. The US data have been converted from fiscal to calendar year terms, and defense-related activities of the Department of Energy, the Coast Guard, and the Selective Service have been added to improve the comparison with Soviet programs. The outlays for each year have been converted to their equivalent in 1981 dollars using detailed price indexes for each type of military expenditure. In this way, trends in cost estimates reflect real changes in military forces and activities and not the effects of inflation. The US figures in this report, therefore, do not match actual budget authorizations or appropriations. US order-of-battle data were also derived from the FYDP; US production data were provided by the Department of Defense.

Changes in the Current Estimates

The estimates presented in this year's paper indicate that for the period 1972-81 the cumulative dollar costs of Soviet defense activities (estimated by the methodology described above) were about $2 trillion—roughly 45 percent more than comparable US outlays. We estimate that in 1981 the Soviet level was about $222 billion and the US level was $154 billion.

CIA estimates of the dollar costs of Soviet defense activities are revised each year to take into account new information, improvements in costing methodologies, and new assessments of the size, composition, and technical characteristics of the Soviet forces and activities. The US data used for comparative purposes are similarly revised each year to take into account changes in the FYDP and the *Defense Planning and Programming Categories* (DPPC).[3] The price bases for both Soviet and US defense activities are updated annually to reflect the most recent price index information.

[3] The use of the DPPC document is explained on page 34.

This year's estimate of the total dollar costs of Soviet defense activities for 1980 is about 10 percent higher than the estimate for 1980 given in last year's report. The increase is largely the result of the change from a 1980 to a 1981 price base—that is, it reflects the higher dollar price levels in 1981. Our estimate of the physical magnitude of overall Soviet defense activities in 1980 shows little change from last year.

However, this year's review shows a period of almost no growth in the dollar costs for Soviet procurement from 1976 to 1981. The difference from last year's estimate results from changes in our assessments of the pace and timing of production of selected weapons in the classes that make up the bulk of procurement—specifically, ships and boats, aircraft, and strategic missiles. These changes, which impact most heavily on the second half of the decade, are based upon evidence that became available in 1982. The resultant procurement plateau is noteworthy in that it has lasted longer than previous cyclical fluctuations and may signal a secular change in the pace or composition of military procurement.

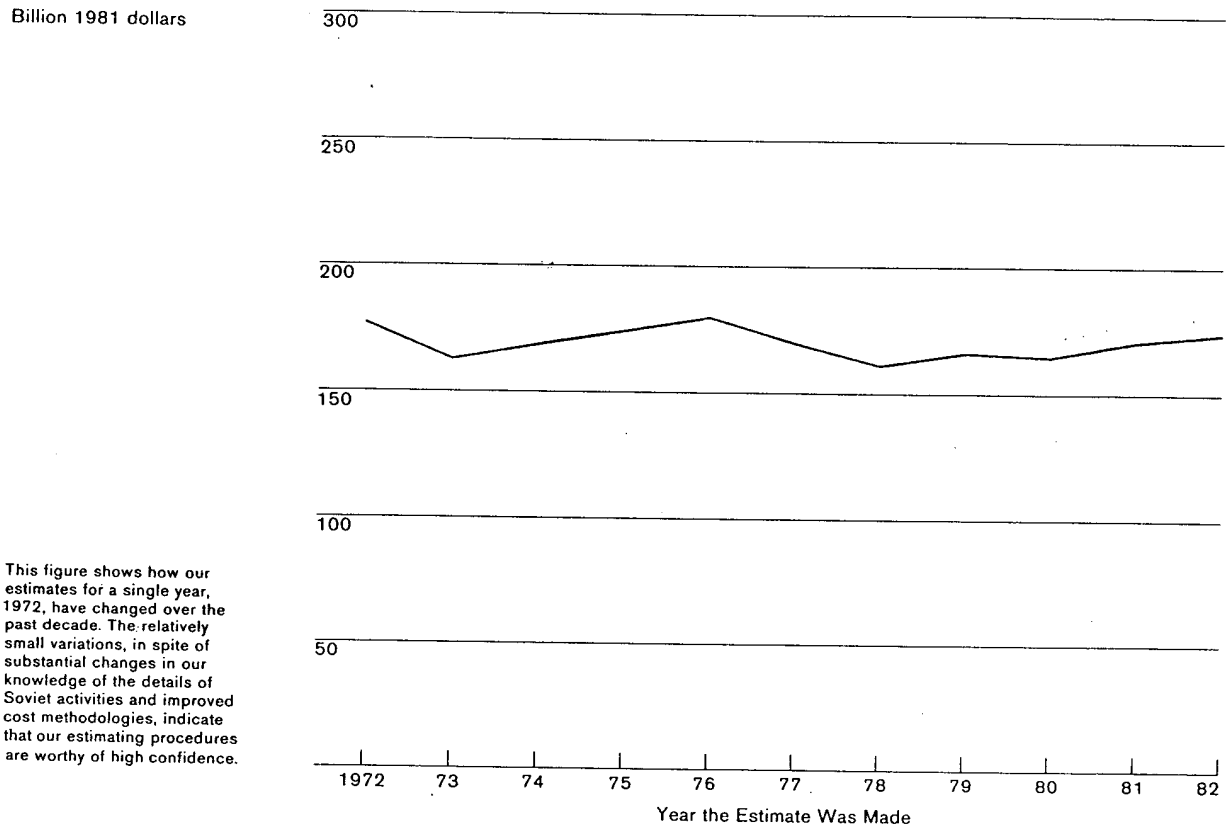
Confidence in the Dollar Cost Estimates

The annual revision to incorporate new information provides a method of assessing how well we estimate the dollar costs of Soviet defense activities. This method is to examine how much change the estimate undergoes each year over a period of several years. Presumably, our estimates for any one year (for example, 1972) would improve as time passes because we should know more about the quantities and characteristics of the weapon systems and facilities produced in that year.

If a given year's estimates changed greatly with every review—indicating that different analysts, improved data, and new methodologies produce very different results—we could have little confidence that we had discovered the accurate level of military activities in that year. On the other hand, if the estimates fluctuated only for a few years after they were first made, and by only a small amount, we could feel confident that they were substantially correct, given the methodology used.

The graph on page 5 shows our total for 1972 as it was estimated each year from 1972 to 1982. It did not change greatly over time, especially in the last few years. All data for this graph have been converted to 1981 dollars to eliminate the effect of inflation. We have made a similar review of our estimated series for the major resource categories and discovered similarly minor variations.

Estimates of the Dollar Costs of Soviet Defense Activities in 1972



This figure shows how our estimates for a single year, 1972, have changed over the past decade. The relatively small variations, in spite of substantial changes in our knowledge of the details of Soviet activities and improved cost methodologies, indicate that our estimating procedures are worthy of high confidence.

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Levels of Confidence in Estimates

Resource Category	Percent of 1972-81 Cumulative Dollar Estimate	Confidence
Personnel	30	Very high
Procurement	25	High
O&M	25	Substantial—improved over the last few years, particularly for ships and aircraft
Construction	5	Substantial
RDT&E	15	Low—derived on the basis of a less certain methodology

The use of this and other statistical techniques leads us to believe that our dollar cost estimate for total defense activities is unlikely to be in error by more than ±10 percent for any year from 1972 to 1981.[4] The margin of error can be much wider for some individual items and categories than for the total. We are more confident in our estimates for the higher levels of aggregation than in those for the lower levels. We generally have more confidence in data that represent trends than in data for absolute levels, especially the levels for individual years.

The table above reflects the confidence we have in each of the major resource categories; it is arranged in descending order of confidence.

All the Soviet data in this paper, whether displayed in graphics or in tables, are presented as point estimates rather than ranges, for the reader's convenience. The reader should remember, however, that around each one of these estimates there is an implicit confidence band and that, in general, when the information is more detailed, the margin of possible error is greater.

Limitations of Dollar Cost Estimates

Dollar costs can be used to compare the overall magnitudes and trends of the defense activities of the two countries in terms of resource inputs. Resource inputs have an important advantage over other inputs (such as the numbers and types of weapons) in that they permit aggregative comparisons. Dollar cost evaluations, for example, take into account

[4] We are most confident in our estimates for the middle years of the 1970s because those estimates are based on the most data. Our confidence is somewhat less for the current year and for the early 1970s. We are even less confident in the historical data for the 1960s presented in the graph on page 17.

differences in the technical characteristics of military hardware, the number and mix of weapons procured, manpower strengths, and the operating and training levels of the forces.

But dollar valuations still measure input rather than output and should not be used as a measure of the overall effectiveness of US and Soviet forces. Assessments of capability must take into account military doctrine and battle scenarios; the tactical proficiency, readiness, and morale of forces; the numbers and effectiveness of weapons; logistic factors; and other considerations. Thus, dollar valuations are useful as general indicators of changes over time in a country's emphasis on military forces. They are not sufficient to compare the overall capabilities of forces. (The order-of-battle data provided with the dollar estimates will, however, give the reader some additional insight into the relative size and composition of the two forces.)

Dollar costs do not measure actual Soviet defense spending, the impact of defense on the economy, or the Soviet perception of defense activities. These issues are more appropriately analyzed with ruble expenditure estimates.

It should also be noted that the Soviet dollar costs given here do not measure manufacturing efficiencies in Soviet defense industries; they are estimates of what it would cost US manufacturers to produce Soviet weapons. Thus, the dollar costs for both countries are based on US efficiencies.

Finally, cumulative dollar estimates for any single type of weapon do not represent stock value. Such estimates would take into account depreciation, loss, retirement, and previously existing inventories.

Ruble Comparisons

To state one country's activities in terms of another country's currency will exaggerate somewhat the size of the first country's effort. This phenomenon—called the index-number problem—affects the comparisons of US-Soviet resource commitments to defense presented here in terms of dollars. To assess the magnitude of its effect, we make comparisons in ruble terms, which are similar though less detailed. The two complementary comparisons provide a logical range within which lies a meaningful relationship.

As a result of differences in the two nations' resource endowments, dollar comparisons of US and Soviet defense activities tend to inflate the size of Soviet costs relative to those of the United States. Manpower is relatively expensive in the United States. Therefore, the US military pay scales built into our dollar cost methodology somewhat exaggerate the magnitude of

Soviet defense efforts, which involve a larger number of uniformed personnel than the US forces do. To make comparisons in ruble terms, we use Soviet price and wage data to cost US defense activities. In the Soviet Union, capital goods are relatively expensive. Such ruble comparisons, therefore, exaggerate the level of US activities that involve capital goods—the reverse of the distortion that occurs in dollar comparisons.

Procedures for Estimating Rubles

To estimate Soviet defense costs in rubles, we use the same methodology as for dollars, described on page 2. To detailed estimates of physical resources, we apply appropriate ruble prices. We have Soviet data that enable us to estimate RDT&E, construction, personnel, a portion of O&M, and much of procurement directly in rubles. We calculate the remainder in dollars and convert it to rubles using a set of ruble-dollar ratios.

Our ruble estimate of US defense activities measures what it would cost, in constant 1970 rubles, for the Soviets to produce and man a military force of the same size and with the same weapons as that of the United States and to operate that force as this country does. To maintain consistency with the dollar estimates, we use the same definition of national security activities in the ruble-based as in the dollar-based comparisons. We derive personnel costs—an element of the operating expenditures category—directly, because we have Soviet pay and allowance data. We apply ruble-dollar ratios to O&M (the rest of the operating category) and to the other two major resource categories—investment and RDT&E.[5]

Results of Ruble Cost Comparisons

Whether measured in dollars or in rubles, Soviet defense costs exceeded US spending by a considerable margin in the late 1970s. In 1981 the estimated total Soviet defense costs in rubles were 25 percent greater than those of the United States measured in rubles. Measured in dollars, they were 45 percent greater. The difference between the dollar and the ruble estimates varied by resource category.[6]

[redacted]

[6] The differences are greatest for procurement, because the USSR has a relative disadvantage in the production of high-quality, technologically advanced equipment—equipment that makes up a large proportion of the US weapons buy. The differences are smallest for military personnel costs, because the differences in the distribution of the ranks of the two forces are offset by differences in the relative rates of pay among the ranks. [redacted]

In the aggregate, we believe that our total dollar valuation of Soviet defense activities is in error by no more than ±10 percent for any year in the past decade. We believe our aggregate ruble estimate for the USSR is as reliable as the dollar estimate. We are confident that total ruble expenditures have been increasing in real terms. We have far less confidence, however, in our assessments of costs of US defense activities expressed in ruble terms and, therefore, less confidence in the ruble comparison of US and Soviet defense activities.

Total Defense Costs

For the 1972-81 period the estimated dollar costs of Soviet defense activities (excluding pensions) exceeded comparable US outlays by about 45 percent. The major trends in the defense activities of the two countries were quite different.

The estimated dollar costs of Soviet defense activities grew during the early-to-mid-1970s at an average annual rate of 4 percent, with growth in all the major missions and resource categories of the defense establishment. Growth in total defense costs continued after 1976 but at an average rate of less than 2 percent, because of the leveling off in this period in investment costs.

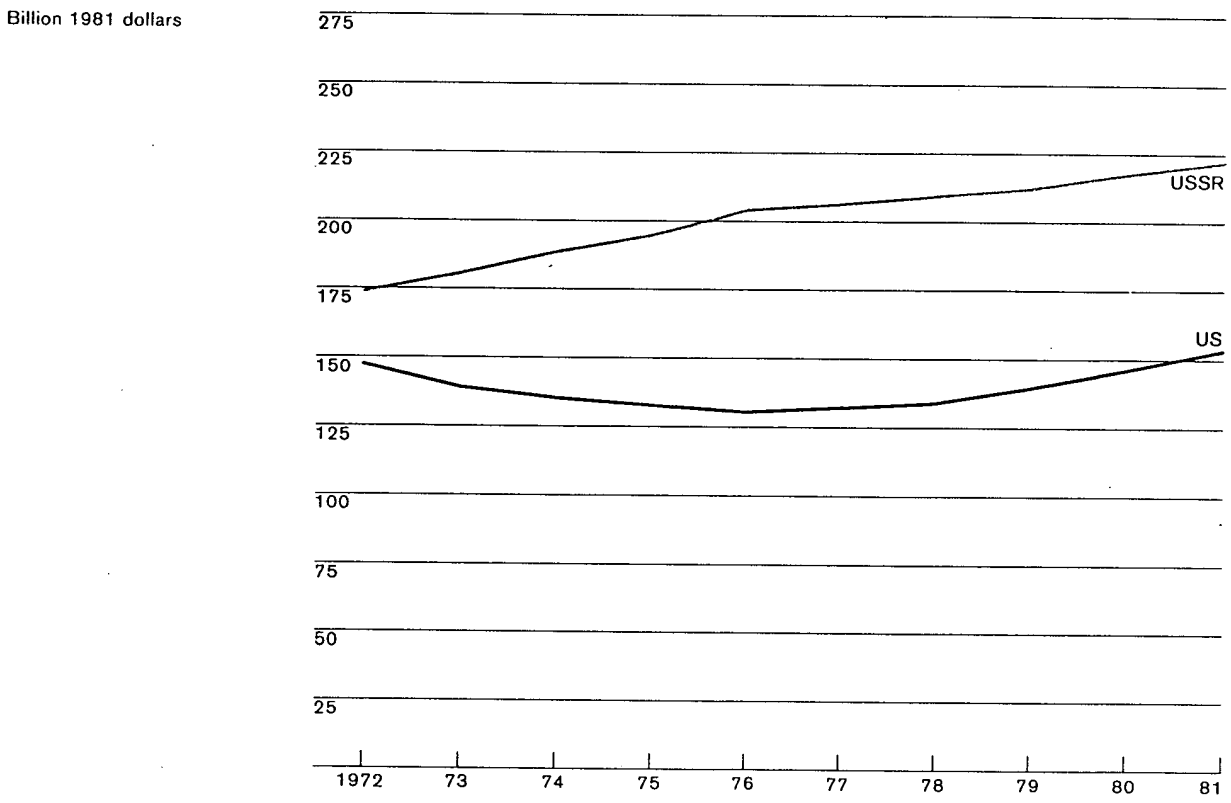
Annual US outlays fell from 1972 to 1976, but from then until the end of the period they grew at an increasing rate. The growth was particularly fast in the resource categories of procurement and O&M, whereas US personnel costs continued to fall until 1979.

As a consequence of these trends, the estimated dollar costs of Soviet defense activities, which were approximately 20 percent greater than US outlays in 1972, were 55 percent higher by 1976. By 1981 the disparity had decreased to 45 percent.

	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	Cumulative	Average Annual Growth Rate (%)
Billion 1981 Dollars												
US	147.3	139.3	135.4	133.0	130.5	132.3	134.3	139.8	146.3	153.6	1,391.8	0.5
USSR	173.9	180.8	188.8	194.9	204.1	206.4	209.6	212.5	217.7	222.3	2,011.1	2.8

US and Soviet Defense Activities

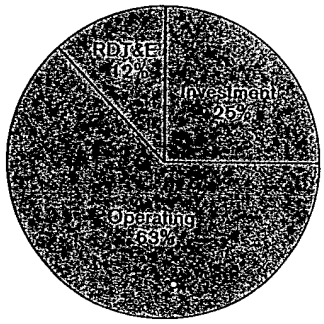
A comparison of US outlays with estimated dollar costs of Soviet activities



Cumulative, 1972–81

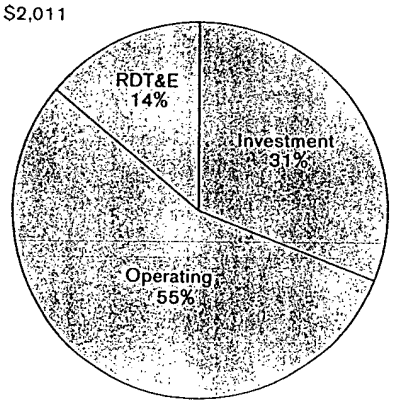
US

Total: $1,392



USSR

Total: $2,011



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A Look at the Future

No projections of future Soviet defense activities are included in this report. There are a number of factors that make it difficult to predict with any confidence these future trends. Experience has shown that new policies concerning defense issues are likely to emerge following a change in Soviet leadership. Khrushchev, while in office, promoted the use of new technology and an orientation toward strategic missiles. During Brezhnev's tenure, conventional forces were reemphasized. It is too soon to determine what changes the Andropov Politburo may introduce.

At present, the evidence on future directions is conflicting. On the one hand, the leveling off of military procurement noted during the late 1970s and the flagging performance of the Soviet economy suggest constraints on the growth of military spending. On the other hand, the large number of weapons under development, their complexity, and the continuing expansion in production and development facilities suggest that the Soviets may be planning a significant qualitative upgrading of their weaponry, which could presage a return to the historic growth patterns of Soviet military expenditures.

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Other Dollar Aggregations

If the dollar cost methodology is to provide comparisons that have some precision, we must apply US cost factors equally to all Soviet activities. In so doing, we apply the relatively high US military pay rates to the large Soviet force. Soviet soldiers, particularly the numerous conscripts, are poorly paid, even in comparison with the average ruble wage in the USSR; and critics of the methodology note that this application makes the total disparity between the two defense establishments look greater than it really is.

The application of US pay rates to Soviet forces is a logical necessity in these comparisons, however—no part of the whole can be withdrawn for calculation by a separate set of rules. But even if uniformed military personnel are excluded from both sides, the estimated dollar costs of Soviet defense activities still exceed US outlays by 35 percent over the period and by 30 percent in 1981.

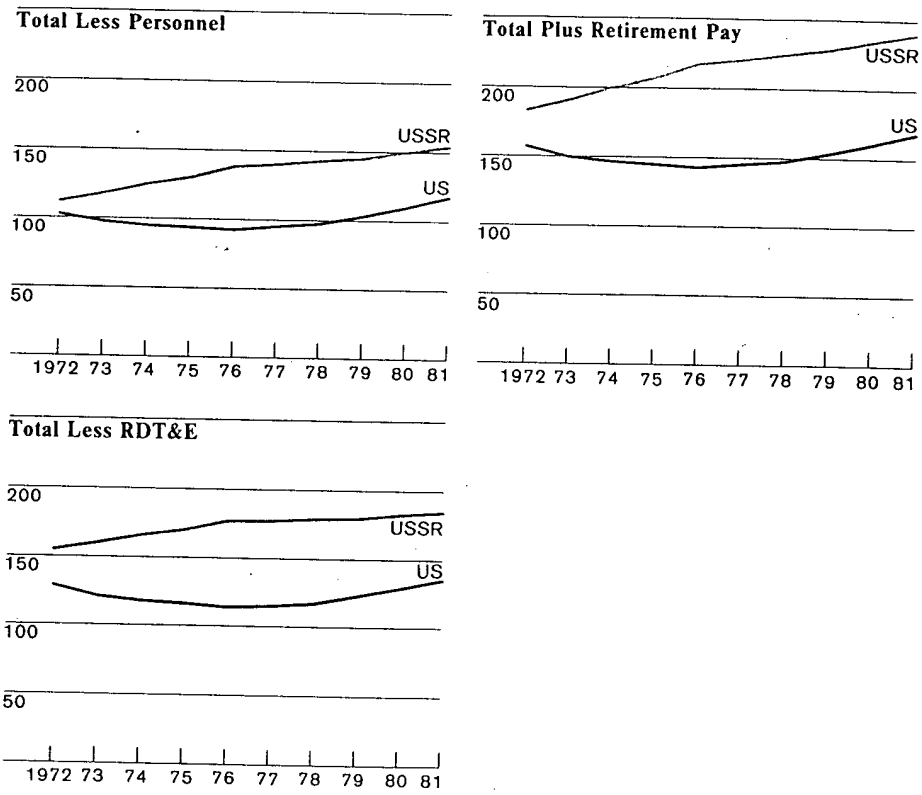
Aggregate comparisons that include military pensions are not highlighted in this paper because pensions are considered to be the cost of past rather than current defense activities. For other purposes, however, the CIA regularly makes detailed estimates of Soviet retirement pay, and we recently revised them upward using a new methodology. Our estimate of the dollar cost of Soviet retirement in 1981 is about $18 billion; US outlays were approximately $14 billion. The number of military personnel serving to retirement is similar in the two countries. Among Soviet retirees, however, the proportion of officers is much greater (relatively few of the conscripts choose to reenlist), and officer pensions are substantially higher. If we add to both sides the dollar cost of retirement, the estimated total dollar costs of Soviet defense activities would be about 40 percent more than US outlays over the period and 45 percent more in 1981.

	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	Cumulative	Average Annual Growth Rate (%)
Billion 1981 Dollars												
Less personnel												
US	102.5	97.7	95.0	93.8	92.3	95.2	97.5	103.3	109.6	117.1	1,004.0	1.6
USSR	111.7	117.9	125.0	129.9	138.1	140.1	142.8	145.0	149.6	154.0	1,354.2	3.6
Plus pensions												
US	156.8	149.4	146.2	144.3	142.4	144.9	147.3	153.3	160.2	167.9	1,512.8	0.8
USSR	182.9	190.8	199.7	206.8	217.0	220.3	224.5	228.4	234.6	240.2	2,145.1	3.1
Less RDT&E												
US	129.4	121.8	118.8	117.3	115.1	116.2	118.1	123.6	129.3	135.7	1,225.4	0.6
USSR	155.1	160.2	166.1	170.1	177.1	177.3	178.9	179.6	182.6	184.7	1,731.6	2.0

US and Soviet Defense Activities

A comparison of US outlays with estimated dollar costs of Soviet activities

Billion 1981 dollars



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Finally, if RDT&E cost estimates (which are less reliable than those for other activities) are excluded from both sides, the estimated Soviet dollar costs exceed the US total by 40 percent for the period and by 35 percent in 1981. The flat trend since 1976 in Soviet costs excluding RDT&E shows that RDT&E has been the primary source of growth in the costs of total Soviet activities since the mid-1970s.

A Historical Perspective

Although the comparisons in this paper are focused on the last 10 years, our data base includes the 1960s. This section takes a brief look at the entire 1960-81 period.

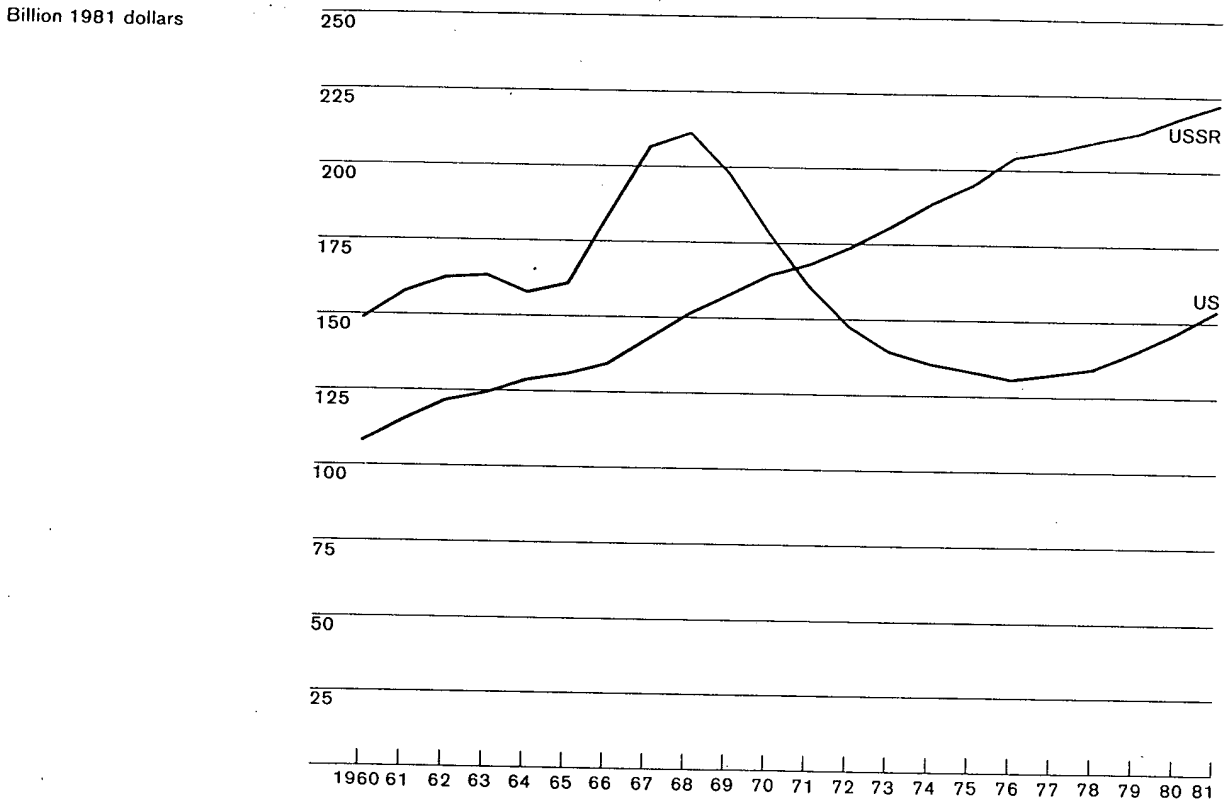
We are less confident in our estimates for the 1960s than in those for the 1970s. The information on production, order of battle, and prices on which our Soviet dollar cost estimates depend is more uncertain for the earlier decade. Because the present US accounting system began in 1962, we have had to estimate the US costs as well for the early 1960s. The process of converting such data into 1981 constant prices introduces further uncertainty into both the Soviet and the US estimates.

Over the 22-year period, US outlays for defense were about $3.5 trillion; the estimated dollar costs of Soviet defense activities were about $3.7 trillion. Since 1960 the dollar costs of Soviet defense activities have grown continually. The average annual growth rate of these costs was approximately 3.5 percent per year.

US outlays for defense displayed a rather erratic pattern, with essentially no overall growth for the 22 years. There were two major peaks, each driven by procurement costs—the first was associated with the strategic arms buildup in the early 1960s and the second, in the late 1960s, with the Vietnam war.

US and Soviet Defense Activities

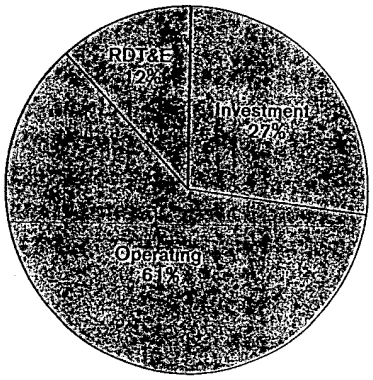
A comparison of US outlays with estimated dollar costs of Soviet activities



Cumulative, 1960-81

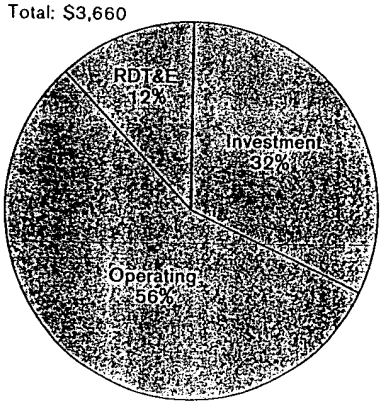
US

Total: $3,479



USSR

Total: $3,660



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Soviet Defense Activities by Geographic Regions of Concern

The largest part of the dollar costs of the Soviets' investment and operating is in response to what they perceive as the two greatest threats to their national security—the military forces of the NATO countries and those of the People's Republic of China. The growth in dollar costs of total Soviet defense activities averaged nearly 3 percent per year over the 1972-81 period. Costs and manpower of Soviet forces opposite China grew at an even greater rate, while those opposite NATO grew more slowly. The forces opposite NATO were modernized but saw little expansion and therefore did not have the high growth rates associated with procuring and maintaining increasing quantities of troops and equipment.

Soviet Forces Opposite NATO

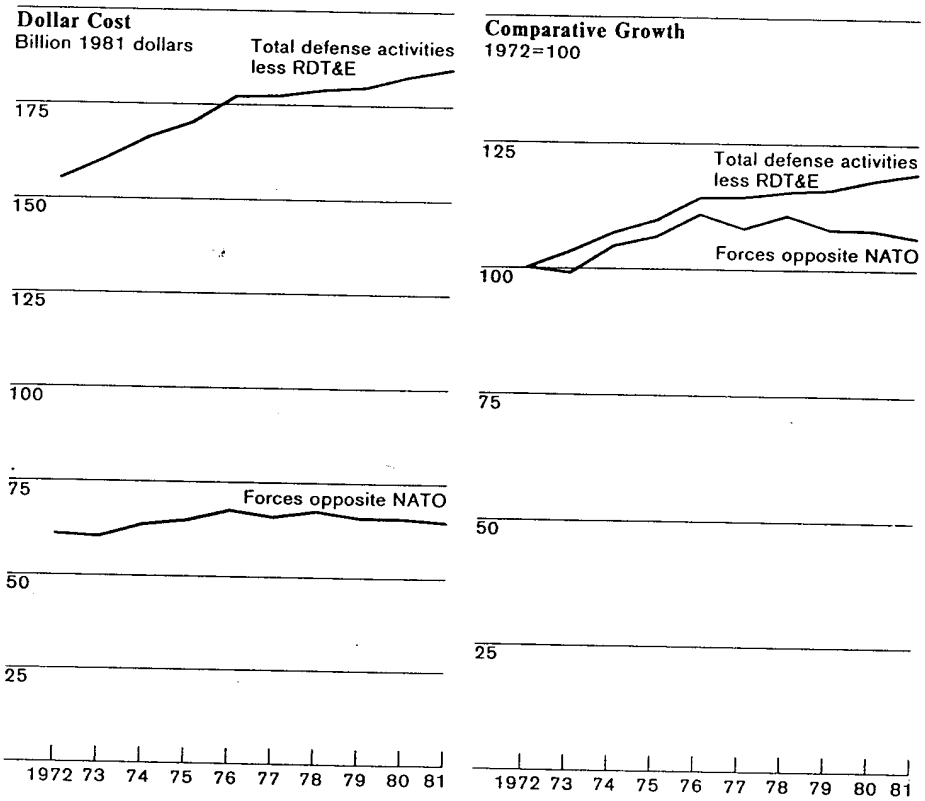
Soviet forces opposing those of the NATO countries are those stationed in the NATO Guidelines Area (NGA), consisting of East Germany, Poland, and Czechoslovakia; in Hungary; in the Leningrad, Baltic, Belorussian, Carpathian, Kiev, Odessa, North Caucasus, and Transcaucasus Military Districts (MDs); and in the Northern, Baltic, and Black Sea Fleets. Most of these are ground and air force units, although there are some air defense, peripheral rocket forces, naval, and border guards personnel and equipment.

In 1972 the estimated dollar costs of these Soviet forces were more than $60 billion. Over $15 billion of this amount was for the forces in the NGA, and nearly $45 billion was for those in Hungary and the eight military districts in the western USSR.[7] The forces opposite NATO accounted for 35 percent of total estimated Soviet defense costs and 40 percent of military manpower. Dollar cost growth averaged about 2 percent per year through 1978 and then began to decline as some of the larger aircraft deployment programs were completed. However, we believe that as new weapon systems, many of which have already been identified, are deployed in the 1980s, the growth in these dollar costs will resume.

Manning in the area increased by only 60,000 during 1972-81, remaining between 1.6 and 1.7 million throughout the period. It is estimated that large increases in the ground and tactical air forces—totaling 120,000 men—were partly offset by a decline of 45,000 in the strategic rocket troops. This decline reflected a reduction in the deployment of older missile systems and their replacement by fewer, and less manpower-intensive, weapons.

[7] Estimates given for geographic areas do not include outlays for RDT&E or for command and support functions at either the service or national level. No attempt has been made to allocate these costs geographically.

Estimated Dollar Costs of Soviet Forces Opposite NATO



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Soviet Forces Opposite China

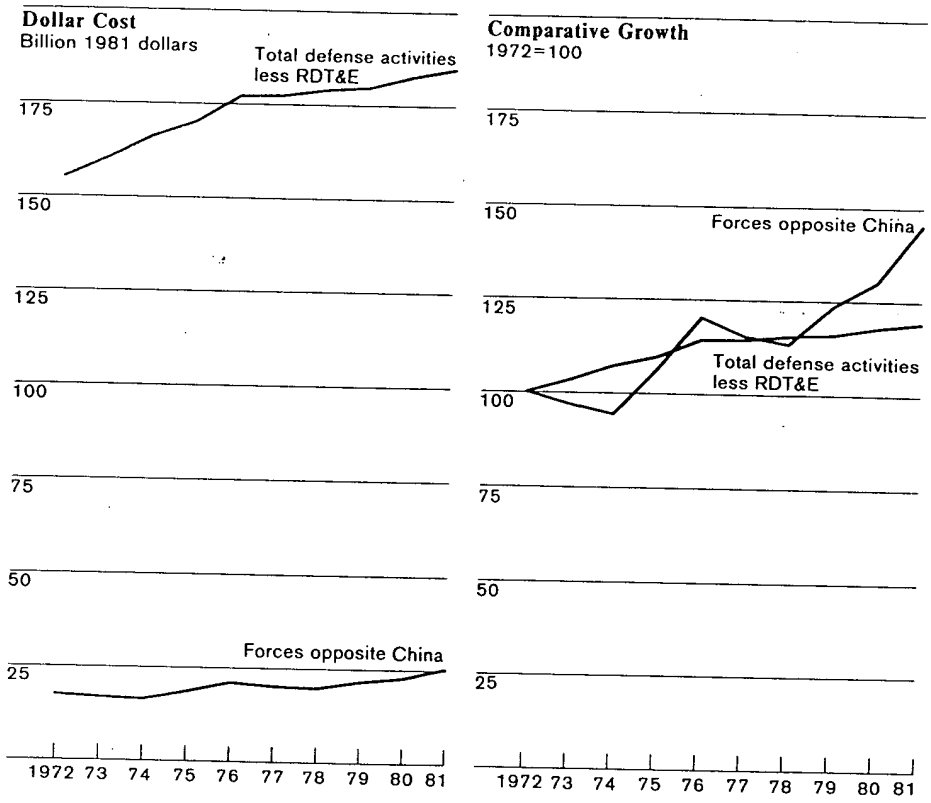
Soviet units and weapons considered to be targeted against China are those located in the Siberian, Central Asian, Transbaikal, and Far East MDs, in Mongolia, and in the Pacific Fleet.

We estimate that in 1972 the dollar costs of these Soviet forces were over $17 billion, or 10 percent of the total. By 1981, costs for forces opposite China amounted to over $25 billion—12 percent of the total. The growth in costs averaged over 4 percent for the period 1972-81, exceeding that of total forces over the period. We recently reassessed the number of men associated with units along the border and have estimated that their level increased from less than 450,000 in 1972 to more than 675,000 in 1981.

Soviet Forces in Afghanistan

The Soviets have completed three full years of military operations in Afghanistan. We have estimated the costs of this involvement for 1980 and 1981 and included them in our totals. The estimates include dollar costs of pay and allowances for ground and tactical air forces personnel (located in both Afghanistan and the USSR) who are involved in the operation. They also include costs of operations, the maintenance of equipment, and construction. The dollar costs of Soviet activities in Afghanistan were an estimated $2.5 billion in 1980 and $2.7 billion in 1981—amounting to just over 1 percent of the total dollar costs of Soviet defense activities in each of the two years. Two-thirds of these totals are incremental costs—that is, they would not have been incurred except for the military operations in Afghanistan. The remainder would have been incurred by those forces with or without the operations.

Estimated Dollar Costs of Soviet Forces Opposite China



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Resource Category Comparisons

The comparison of Soviet and US defense activities presented in this section separates defense costs into the following resource categories, as defined in the US budget:

- *Investment costs*—the dollar costs of activities to replace, modernize, or expand forces through the procurement of equipment, including major spare parts and the construction of facilities.
- *Operating costs*—uniformed and civilian personnel costs and other costs associated with operating and maintaining equipment and facilities. These are directly related to the size of the forces and the level of their activity.
- *RDT&E costs*—the costs of exploring new technology, developing new weapon systems, and developing improvements to existing systems.

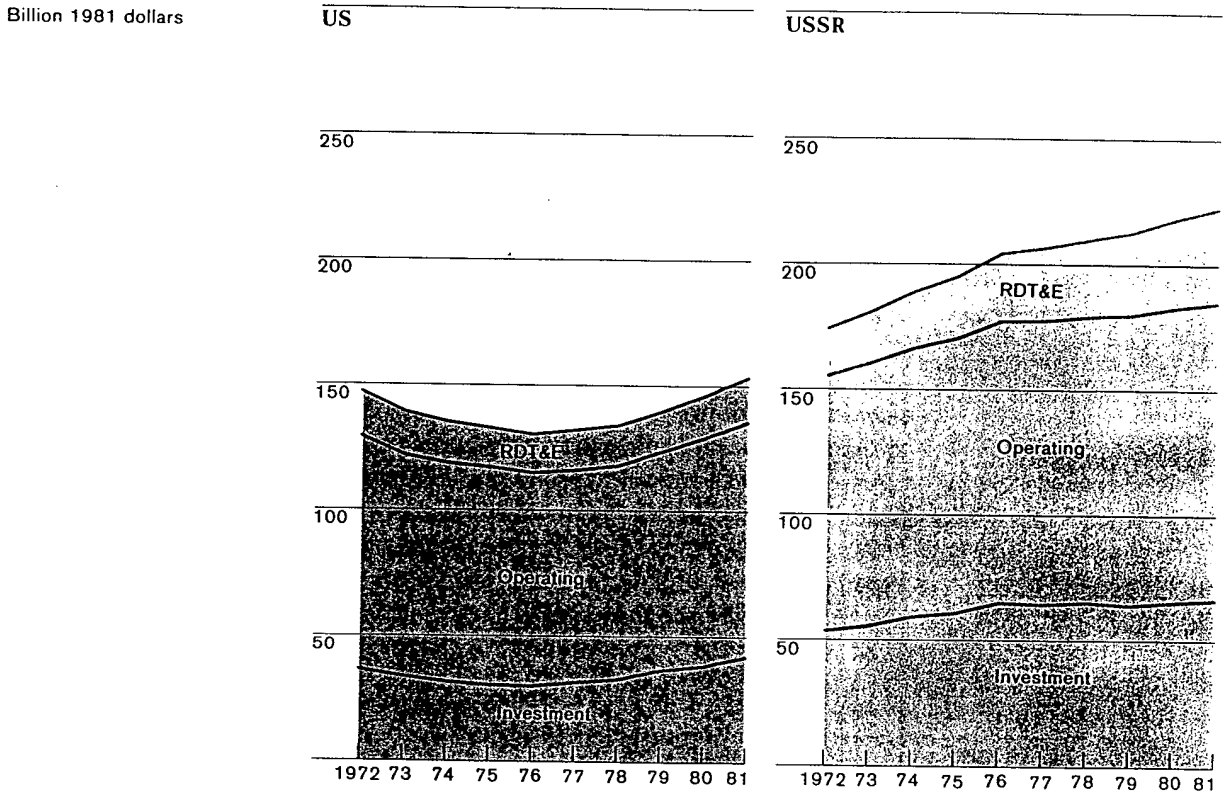
Estimated Dollar Costs of Soviet Resource Outlays as a Percent of Comparable US Outlays

	1981	1972-81 Total
Investment	160	180
Operating	125	125
RDT&E	210	170

	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	Cumulative	Average Annual Growth Rate (%)
Billion 1981 Dollars												
US												
Investment	36.4	33.7	31.5	30.2	29.9	31.3	32.7	36.5	38.4	41.9	342.6	1.8
Operating	93.0	88.1	87.3	87.1	85.3	84.9	85.4	87.2	90.9	93.8	882.9	0.1
RDT&E	17.9	17.5	16.6	15.7	15.4	16.1	16.1	16.2	17.0	17.9	166.4	0.1
Total	**147.3**	**139.3**	**135.4**	**133.0**	**130.5**	**132.3**	**134.3**	**139.8**	**146.3**	**153.6**	**1,391.8**	**0.5**
USSR												
Investment	53.7	55.6	59.1	60.7	64.8	64.2	65.0	63.9	65.2	66.1	618.2	2.4
Operating	101.4	104.6	107.0	109.4	112.3	113.1	113.9	115.7	117.4	118.6	1,113.3	1.8
RDT&E	18.8	20.6	22.7	24.8	27.1	29.1	30.7	32.9	35.2	37.6	279.6	8.0
Total	**173.9**	**180.8**	**188.8**	**194.9**	**204.1**	**206.4**	**209.6**	**212.5**	**217.7**	**222.3**	**2,011.1**	**2.8**

Military Resources

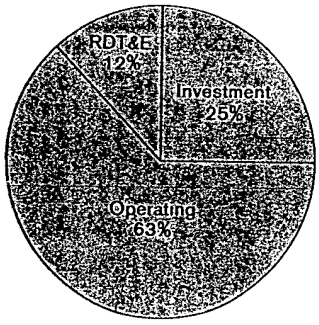
A comparison of US outlays with estimated dollar costs of Soviet activities



Cumulative, 1972–81

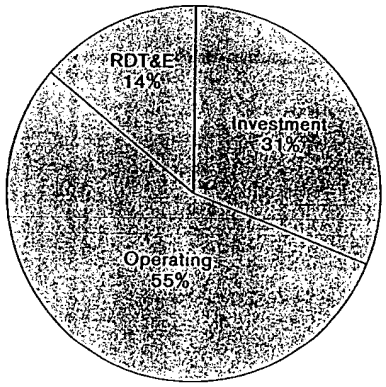
US

Total: $1,392



USSR

Total: $2,011



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Investment Costs

Investment costs can be divided into two subtotals:

- *Procurement*—the estimated costs of procuring weapon systems and support equipment, including major spare parts.
- *Construction*—the estimated costs of constructing the required facilities.

For the 1972-81 period, the estimated cumulative dollar costs of Soviet investment were 80 percent greater than US investment outlays (although this margin was higher in the mid-1970s and somewhat lower at the beginning and end of the period). Cumulative procurement estimates were 70 percent greater, and cumulative construction estimates were three times as great.

Soviet Trends

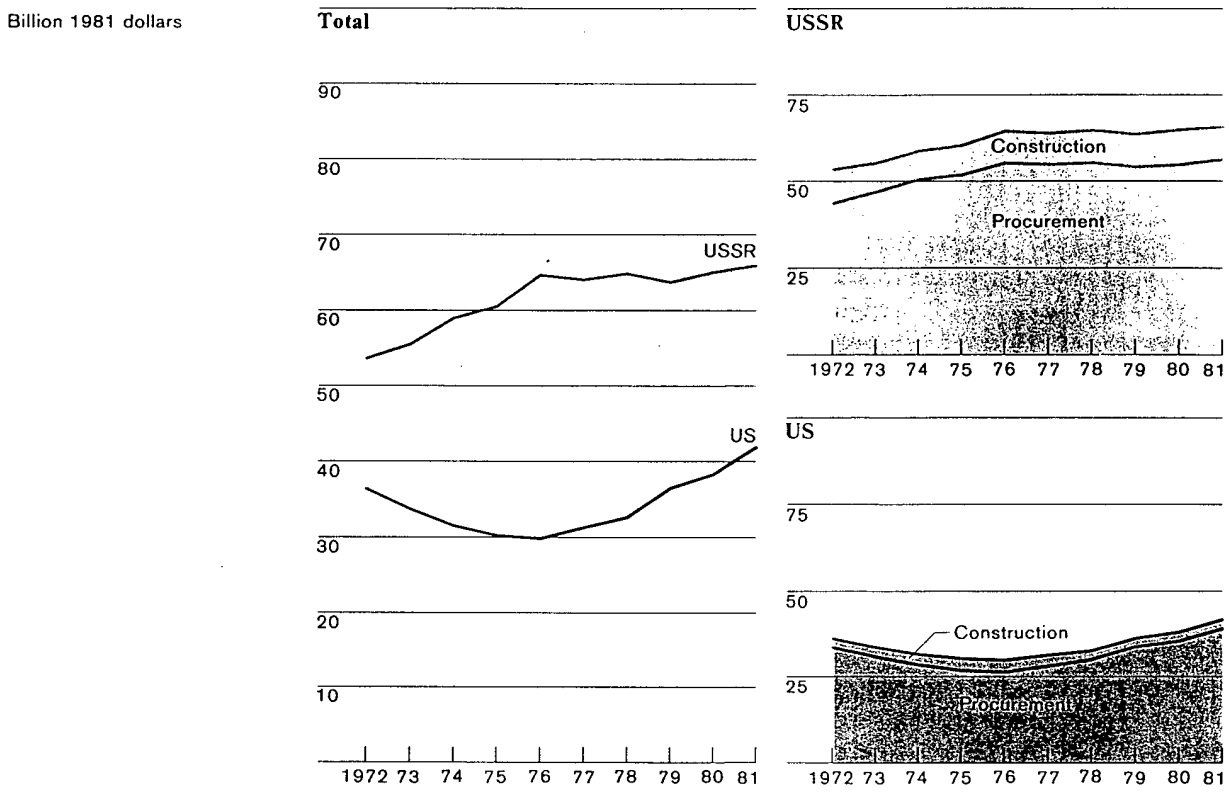
The estimated dollar costs of Soviet investment grew over the 1972-76 period at an average annual rate of nearly 5 percent. Between 1976 and 1981, however, these costs showed little or no growth, reflecting a slowdown in military procurement. Because these estimates are so sensitive to the changes in our assessments of Soviet military programs made in each update, we place less credence in annual changes than in longer term trends. This is particularly true for the procurement estimates for 1980 and 1981, which include the leading edge of costs associated with weapons expected to be completed in 1982-84. As we collect additional information on the pace of those programs in the future, our assessments of 1980 and 1981 are subject to change.

While we believe we have correctly assessed a slowdown in the growth of Soviet military procurement, we do not yet know what this portends for the coming years. Procurement activities may remain relatively constant for a few years. However, the Soviets have continued to devote considerable resources to military research and development (R&D) activities since the mid-seventies (as measured by growth in R&D facilities and number of weapons programs under development), as well as to expansion of military production facilities.

	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	Cumulative
Billion 1981 Dollars											
US											
Procurement	33.5	30.7	28.4	26.8	26.4	28.1	30.0	33.9	35.6	39.4	312.9
Construction	2.8	3.0	3.1	3.5	3.5	3.2	2.7	2.6	2.7	2.6	29.6
Total	**36.4**	**33.7**	**31.5**	**30.2**	**29.9**	**31.3**	**32.7**	**36.5**	**38.4**	**41.9**	**342.6**
USSR											
Procurement	43.9	47.2	50.8	52.2	55.6	55.2	55.6	54.4	55.1	56.6	526.7
Construction	9.8	8.4	8.3	8.5	9.2	9.0	9.4	9.4	10.1	9.4	91.5
Total	**53.7**	**55.6**	**59.1**	**60.7**	**64.8**	**64.2**	**65.0**	**63.9**	**65.2**	**66.1**	**618.2**

Military Investment

A comparison of US outlays with estimated dollar costs of Soviet activities



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In the first three years of this decade we have already identified as many systems under development as in each of the previous two decades. Among these are fighter and airborne warning and control aircraft, ballistic and cruise missiles, space systems, and submarines. We project that more systems will reach initial operational capability in the 1980s than in either the 1960s or 1970s. The new systems cover the full range of technologically advanced weaponry the Soviets will need to modernize all major elements of their forces. (

Steady expansion of production floorspace—averaging 2 to 3 percent a year—has also occurred since the mid-1970s. This has provided the Soviets with the potential (once technological and economic problems are resolved, or the leadership chooses to raise the already high priority given to defense activities) to translate the new systems into deployments in the field. Thus, the dollar costs of Soviet military procurement activities could resume their historical growth. (

Factors Underlying the Soviet Procurement Trend

We cannot with certainty explain why the growth of Soviet procurement activities has slowed. There are several factors we can identify as possible causes, but we cannot yet calculate their relative significance. And there are probably additional factors we have yet to identify.

Soviet military procurement over the past two decades has grown at an average annual rate of about 3 percent when calculated in dollars. This growth has not been constant, however, and the production cycles for major weapon systems—ICBMs, submarines, and aircraft—have introduced fluctuations in the rate of growth as especially costly systems are phased out of production and retooling for the next generation occurs. Some of these effects are discernible in the mid- and late 1970s, as the fourth generation of ICBMs was deployed and the D-class ballistic missile submarine programs neared completion. Moreover, some new systems encountered technical problems on the test ranges that may have delayed their introduction. The fluctuations introduced by such procurement phasing, however, appear neither to be abnormal nor to explain more than a temporary decline in the rate of growth, one lasting two or three years.

Thus, one component of historic procurement behavior—the deployment cycle—is clearly present in the declining growth of military investment during the last five years, but it does not explain the duration of the present trend.

Arms control constraints might also have figured in the slowdown of military procurement, although the evidence is mixed. The ABM and SALT I agreements did little to curtail the modernization of the affected forces, and some force components were expanded throughout the period. Moreover, some production resources were simply shifted from treaty-controlled systems to uncontrolled systems, as was the case of solid-propellant output redirected from the SS-16 ICBM to the SS-20 IRBM. It is too early to tell how long the Soviet leadership will adhere to the limits negotiated for the still unratified SALT II agreement and how this will figure into future procurement trends.

It is possible that the Soviets made a decision in the mid-1970s to accelerate the modernization of their armed forces. A conscious strategy to upgrade the performance of their weaponry could have contributed to a prolonged no-growth period of procurement as Soviet planners attempted to alter the character of future forces. A somewhat similar period was noted in the late 1950s under Khrushchev, when resources were redirected from conventional to strategic weapons. Delays could be expected as new manufacturing technologies were assimilated in the course of producing more sophisticated systems. While there is occasional evidence of difficulties in mastering sophisticated production technologies, we are unable to assess the extent to which modernization might have contributed to the recent procurement slowdown. Even so, it is clear that R&D expenditures have risen rapidly—a trend which is consistent with accelerated modernization.

There is also mounting evidence that bottlenecks in the Soviet economy are interfering with military production, although we cannot measure the extent of their impact on the procurement slowdown. The Soviets have traditionally accorded top priority to defense industries and in time of economic retrenchment have shielded military procurement. Since the mid-1970s, however, shortfalls in the production of key industrial commodities—steel, oil, coal, and construction materials—have contributed to a sharp slowdown in industrial output. Problems in rail transport and power generation have delayed deliveries of raw materials and industrial products to plants involved in military production. While there are reports of defense plants being affected by disruptions in the economy, there is no indication of how widespread these incidents are or how significantly they might have influenced the execution of defense procurement plans.

Moreover, although we have no direct evidence, we cannot rule out the possibility that the leadership, in response to the country's mounting economic problems, tried to ease pressure on the economy by stretching out some procurement programs. Such a policy would have been consistent with the leaders' decision to scale back overall investment targets as part of the 10th Five-Year Plan.

Such a policy could also reflect a midstream correction of emerging difficulties after the Plan was adopted. If a decision was made to hold down procurement growth, the leadership could probably have justified it by pointing out that military procurement levels in the USSR would still be significantly higher than in the United States, as previously noted.

Finally, the late 1970s and early 1980s were years of major exports of Soviet military equipment. Political and economic considerations, especially a desire to earn hard currency, may have played a part in a decision to divert resources from domestic procurement to foreign export.

Taken together, the above considerations probably all contributed to depressing the rate of growth of Soviet military procurement, although we cannot be sure that they alone explain the trends of the past five years.

Comparison of US and Soviet Trends

US investment outlays during 1972-81 showed a trend almost directly opposite that of the dollar costs for Soviet investment. The US costs fell by almost 20 percent through 1976, while Soviet costs grew. By 1979, however, the US outlays had surpassed their 1972 level and were continuing to grow. They averaged 7-percent annual growth during 1976-81—the period when Soviet investment leveled off.

As a result of these trends, the dollar outlays were most disparate in the mid-1970s, when Soviet dollar costs were more than twice the US outlays. Since then, the gap has narrowed. Even so, in 1981 the dollar costs for Soviet investment were nearly 60 percent greater than US outlays.

The estimated dollar costs of Soviet missile procurement grew nearly 80 percent over the period and led the trend in our estimate for Soviet investment. The dollar costs of ship procurement grew by 35 percent over the period and those of aircraft procurement by 10 percent.

On the US side, the decline in land armaments procurement led the decrease in investment outlays during 1972-76, and the acquisition of new land armaments and aircraft led the 40-percent growth that followed.

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Operating Costs

Operating costs can be divided into two subtotals:

- *Uniformed personnel costs,* which include food, clothing, travel, and other pay and allowances for active and reserve military manpower but do not include retirement pay.
- *O&M costs,* the costs of operating and maintaining military equipment and facilities, including those for civilian personnel.

Over the period and in 1981, the estimated dollar costs of operating the Soviet forces were 25 percent more than corresponding US outlays. Soviet personnel costs for 1972-81 were 70 percent more, and O&M costs were slightly less.

Trends in the two countries' operating costs closely followed those of total defense activities. This is because operating costs are directly related to the size of a military force and the type and extent of its activities.

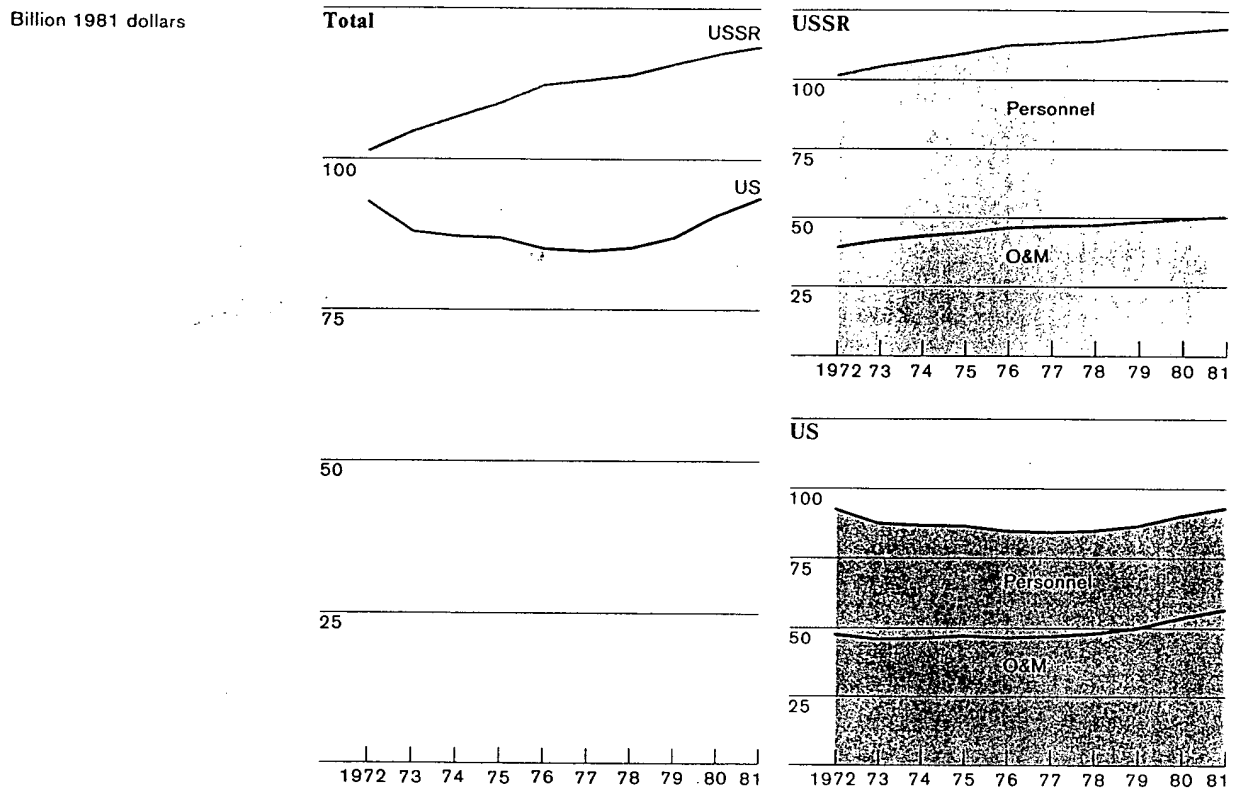
The estimated dollar costs of Soviet operating activities grew at an average rate of almost 2 percent over the period, with O&M costs growing faster than personnel costs. The largest increase in O&M costs was in the support mission; the largest military personnel cost increase (over half the total) was in land forces.

US operating costs fell through 1977 but have grown 10 percent overall since then. O&M costs have grown since 1973, speeding up somewhat in the last two years of the period. This growth was particularly evident in the general purpose missions. Personnel costs decreased (primarily in the support mission) until 1979 and have fluctuated since then.

	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	Cumulative
Billion 1981 Dollars											
US											
Personnel	44.8	41.6	40.4	39.3	38.2	37.2	36.8	36.6	36.7	36.5	387.9
O&M	48.2	46.5	46.9	47.8	47.1	47.7	48.7	50.6	54.2	57.3	495.0
Total	**93.0**	**88.1**	**87.3**	**87.1**	**85.3**	**84.9**	**85.4**	**87.2**	**90.9**	**93.8**	**882.9**
USSR											
Personnel	62.2	62.9	63.8	65.0	66.0	66.3	66.8	67.5	68.1	68.3	656.9
O&M	39.2	41.7	43.2	44.4	46.2	46.8	47.1	48.3	49.3	50.3	456.4
Total	**101.4**	**104.6**	**107.0**	**109.4**	**112.3**	**113.1**	**113.9**	**115.7**	**117.4**	**118.6**	**1,113.3**

Operating Activities

A comparison of US outlays with estimated dollar costs of Soviet activities



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Research, Development, Testing, and Evaluation

Estimates of the dollar costs of Soviet RDT&E activities are derived in the aggregate using a methodology less certain than that based on detailed study of the military forces and their equipment. The RDT&E estimates should therefore be considered less reliable than the others in this assessment. Nevertheless, the available information on particular RDT&E projects, published statistics on scientific activities, and statements by Soviet authorities on the financing of research indicate that military RDT&E expenditures were large and growing during the 1972-81 period. Moreover, our estimates do not take into account the additional costs for research and development the Soviets might have incurred had they not been able to obtain Western technology through both overt and covert means.

Physical evidence on resources devoted to this effort reinforces this assessment. The Soviets expanded their military RDT&E facilities and manpower by one-third during the period, and construction costs and capital investment at those facilities have been growing annually.

RDT&E continued at a high level in 1981. The Soviets are developing many new weapon systems, many of them incorporating advanced technologies. These expensive changes are expected to continue to drive up Soviet RDT&E outlays.

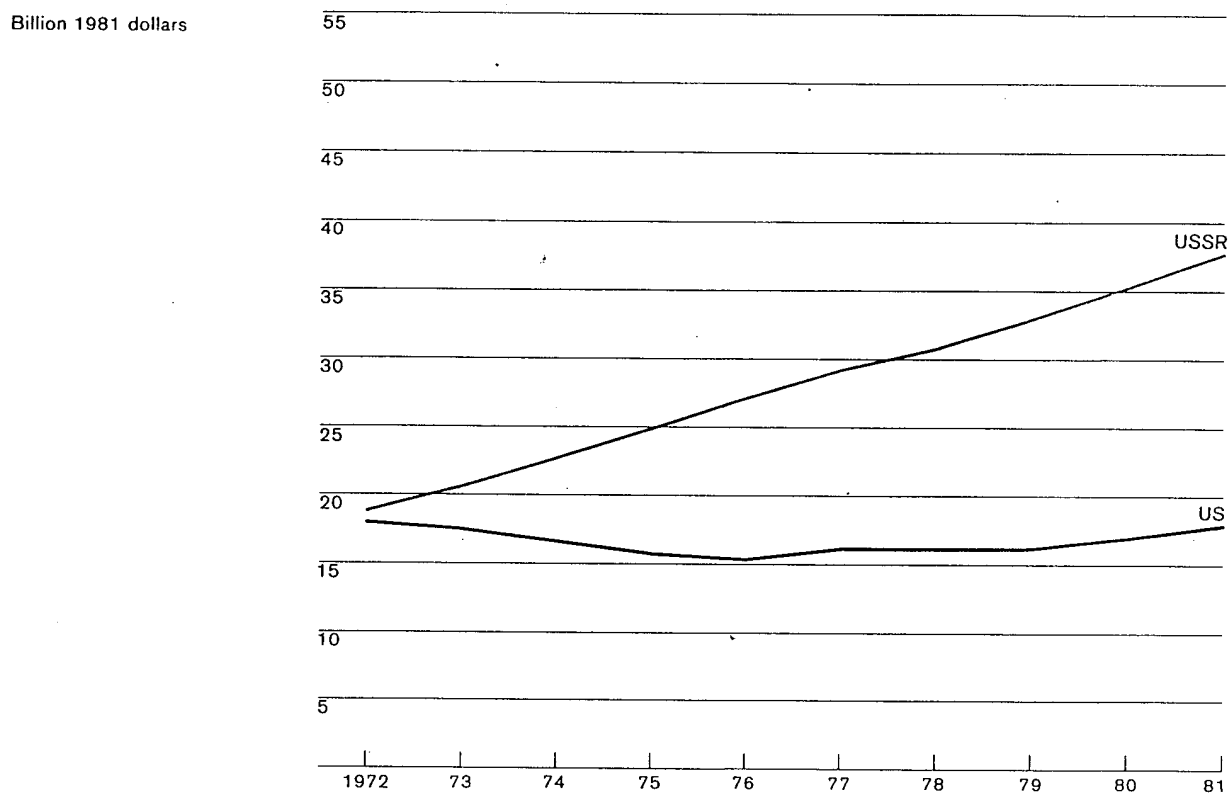
There are about 100 new or substantially modified weapon systems currently under development. They include ballistic, surface-to-air, antitank, and naval cruise missiles; fighter, airborne warning and control (AWAC), and support aircraft, the latter including a wide-bodied transport; a large aircraft carrier, a guided-missile cruiser, and several submarines; ground force weapons, including a new tank; and several new space systems.

US outlays for RDT&E declined from the beginning of the period through 1976 but then grew until outlays in 1981 were approximately equal to those in 1972. The dollar costs of Soviet military RDT&E doubled from 1972 to 1981. For the period as a whole, the estimated dollar costs of Soviet RDT&E activities were 70 percent larger than corresponding US outlays. In 1981 they were more than 100 percent larger.

	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	Cumulative
Billion 1981 Dollars											
US	17.9	17.5	16.6	15.7	15.4	16.1	16.1	16.2	17.0	17.9	166.4
USSR	18.8	20.6	22.7	24.8	27.1	29.1	30.7	32.9	35.2	37.6	279.6

RDT&E

A comparison of US outlays with estimated dollar costs of Soviet activities



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Military Mission Comparisons

Mission comparisons presented here, except where noted, are organized in accordance with the 1981 version of the *Defense Planning and Programming Categories* of the US Department of Defense. This is not the way the USSR organizes its military missions or allocates its defense resources, but it enables us to compare US and Soviet forces and costs in familiar US terms. The dollar costs presented in the various mission comparisons do not include any RDT&E outlays, because we are unable to divide Soviet RDT&E costs by missions.

In the sections that follow, we show the major missions divided into each of their components (for example, the general purpose mission is divided into land, tactical air, naval, and mobility forces). Line graphs are used to show the movements of dollar costs over time, and pie charts show the distribution of cumulative costs between investment, operations and maintenance, and personnel.

There were considerable differences in the trends of the dollar costs for the two countries. The estimated annual dollar costs of Soviet missions grew by about 20 percent over the 1972-81 period:

- The dollar costs of Soviet strategic forces grew by more than 15 percent, although there was considerable fluctuation of ICBM, ballistic missile submarine, and strategic air defense activities because of the cyclical nature of procurement.
- The costs of Soviet general purpose forces grew rapidly over the period (25 percent) primarily because of increased investment for the land and naval missions and increases in the land forces personnel account.

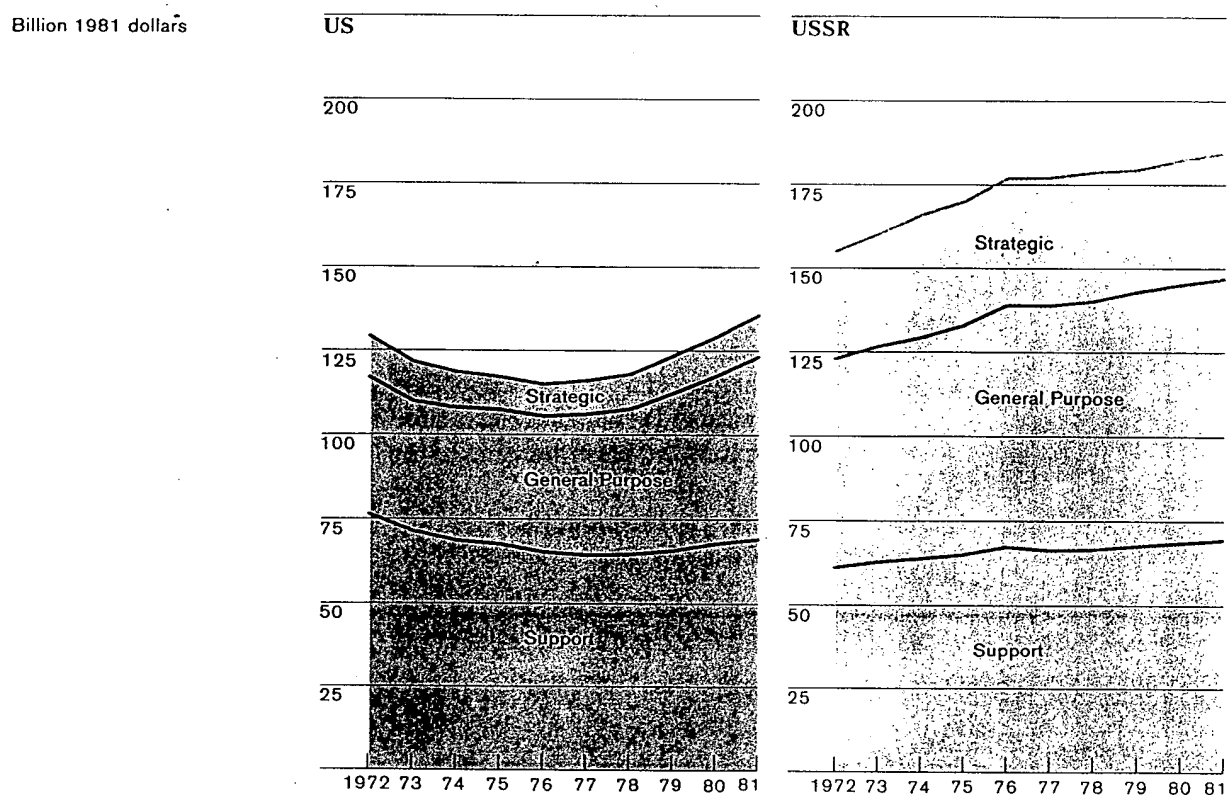
Soviet Defense Missions as a Percent of Comparable US Defense Outlays

Percent

	1981	1972-81 Total
Strategic forces	305	335
General purpose forces	145	165
Support forces	100	95
Total (excluding RDT&E)	135	140

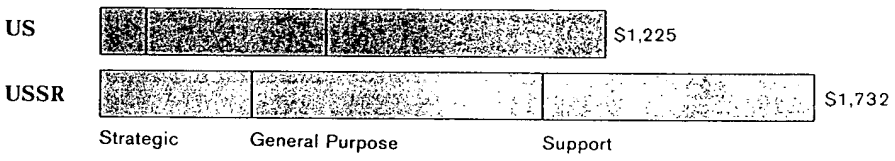
Major Missions

A comparison of US outlays with estimated dollar costs of Soviet activities



Cumulative, 1972-81

Billion 1981 dollars



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- The costs of Soviet support forces also grew (15 percent) as a consequence of the need to train, supply, and maintain personnel and equipment in the growing strategic and general purpose missions.

US mission activities declined by 10 percent between 1972 and 1976 and then grew by almost 20 percent between 1976 and the end of the period. Only by 1981 did the US costs surpass their 1972 level:

- Outlays for strategic forces fell by more than 20 percent during 1972-76 and then grew by 30 percent during 1976-81. Leading the increase were the procurement costs for the Trident ballistic missile submarine (SSBN) program.

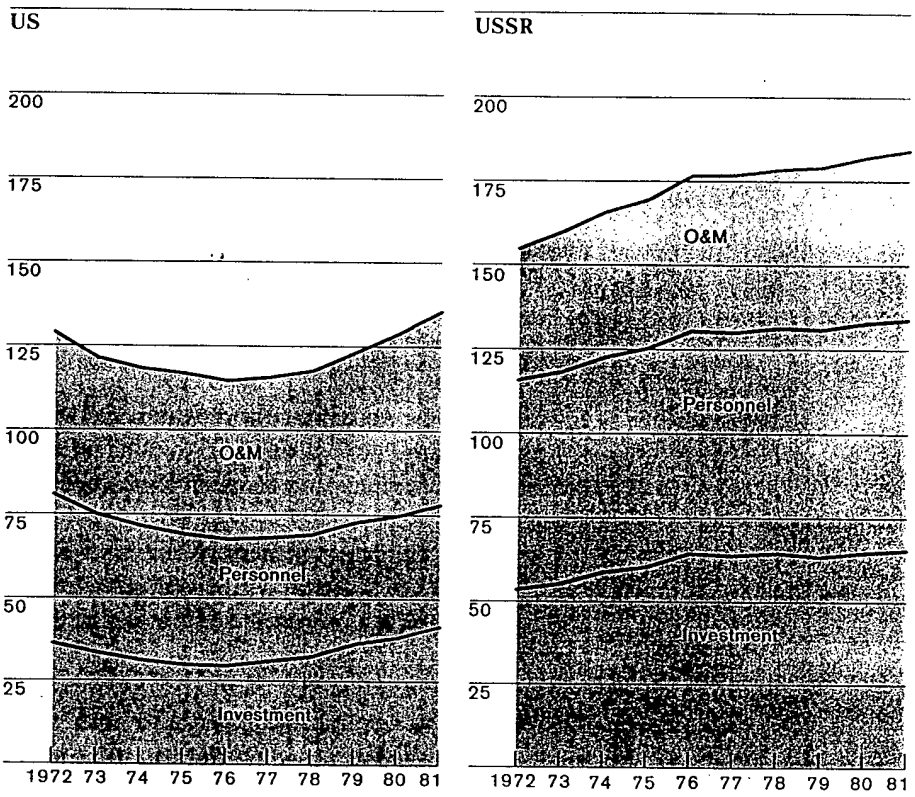
- Outlays for general purpose forces displayed the largest growth, rising an average of 6 percent per year since 1976 and 3 percent over the whole timespan. The primary causes of this growth were the procurement of new land arms and tactical aircraft and increased O&M costs for the naval component of the general purpose mission.

- Support costs, like the other missions, fell through 1977. Unlike other missions, they grew very little over the rest of the period.

	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	Cumulative	Average Annual Growth Rate (%)
Billion 1981 Dollars												
US												
Strategic	12.3	11.7	10.7	9.8	9.5	10.0	10.4	11.1	11.7	12.4	109.7	0.3
General purpose	40.7	38.6	39.5	39.9	40.2	41.8	43.1	46.8	49.8	54.1	434.5	3.3
Support	76.4	71.5	68.6	67.6	65.4	64.4	64.6	65.8	67.8	69.1	681.3	−1.1
Total	**129.4**	**121.8**	**118.8**	**117.3**	**115.1**	**116.2**	**118.1**	**123.6**	**129.3**	**135.7**	**1,225.4**	**0.6**
USSR												
Strategic	32.1	33.5	36.7	37.0	37.9	38.2	38.4	36.4	37.3	37.7	365.2	1.9
General purpose	61.9	64.0	65.5	68.0	71.7	72.6	73.8	75.5	76.6	77.4	707.1	2.5
Support	61.1	62.8	63.9	65.1	67.4	66.5	66.7	67.7	68.6	69.6	659.3	1.5
Total	**155.1**	**160.2**	**166.1**	**170.1**	**177.1**	**177.3**	**178.9**	**179.6**	**182.6**	**184.7**	**1,731.6**	**2.0**

Major Missions by Resource Categories

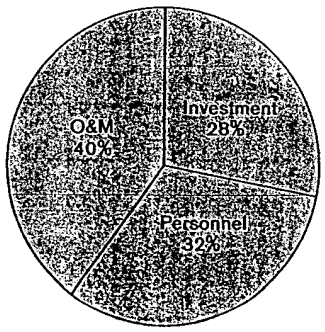
A comparison of US outlays with estimated dollar costs of Soviet activities



Cumulative, 1972-81

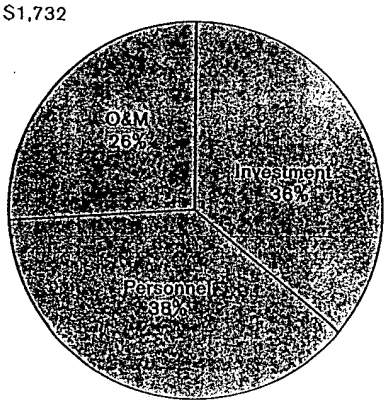
US

Total: $1,225



USSR

Total: $1,732



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Strategic Forces

Strategic forces are defined to include strategic offense (intercontinental and peripheral attack), strategic defense, strategic control and surveillance, and nuclear weapons. (Although the last is not a DPPC category, we include all nuclear weapon costs with strategic forces.)

Over the period, estimated cumulative dollar costs of Soviet strategic force activities (exclusive of RDT&E) were more than triple the corresponding US outlays. This disparity reflects Soviet efforts to add new intercontinental attack forces during the period, while the United States chose instead to modernize its existing inventory. It also reflects a Soviet emphasis on peripheral attack forces (for which the United States has no counterpart) and substantially greater Soviet strategic defense forces deployed against a large, diversified threat. If peripheral attack forces are excluded, the level of Soviet activity for strategic forces was still nearly three times that of the United States.

Soviet strategic activities during the period were characterized by:

- Improvement of an already large peripheral attack force.
- Continued emphasis on forces for strategic defense against bomber attack.
- Expansion and improvement of the land-based and the submarine-launched intercontinental ballistic missile (ICBM and SLBM) forces, resulting in at least rough parity with the United States by the end of the period.

US strategic programs, on the other hand, were characterized by:

- Qualitative—as opposed to quantitative—improvement in the ICBM, SLBM, and heavy bomber forces.

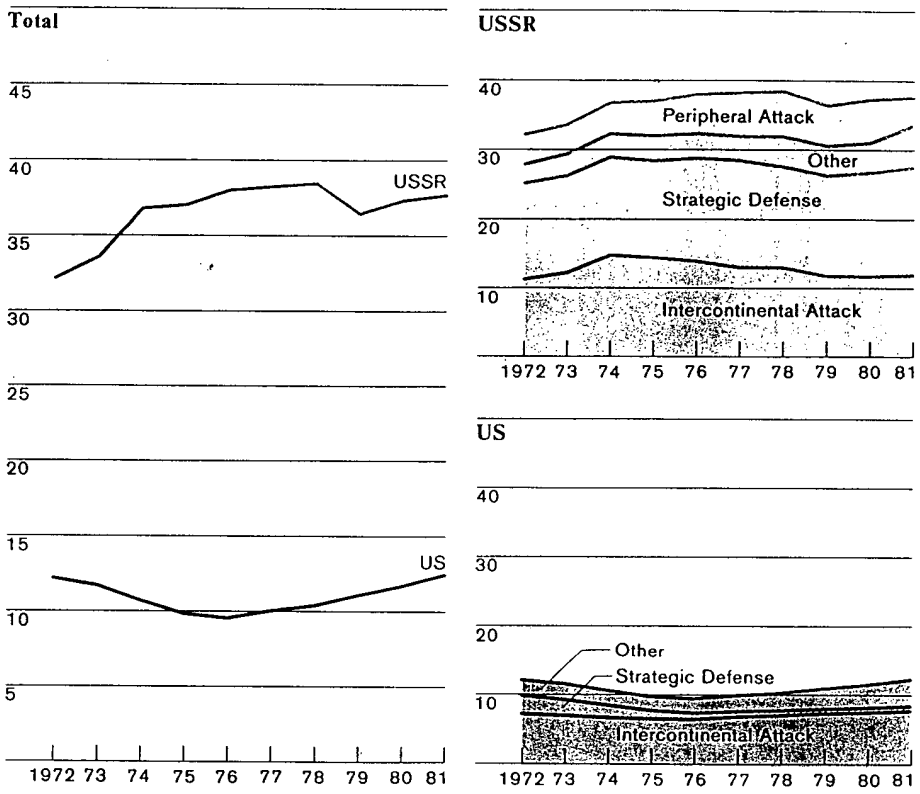
	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	Cumulative
Billion 1981 Dollars											
US											
Intercontinental attack	7.3	7.1	6.8	6.6	6.6	7.0	7.2	7.5	7.6	7.9	71.5
Strategic defense	2.6	2.3	1.8	1.2	0.9	0.7	0.7	0.7	0.7	0.7	12.2
Other [a]	2.3	2.3	2.1	2.0	2.1	2.3	2.5	3.0	3.4	3.9	25.9
Total	**12.3**	**11.7**	**10.7**	**9.8**	**9.5**	**10.0**	**10.4**	**11.1**	**11.7**	**12.4**	**109.7**
USSR											
Intercontinental attack	11.2	12.1	14.7	14.3	13.8	13.0	13.0	11.7	11.7	11.9	127.3
Peripheral attack	4.3	4.2	4.5	5.0	5.7	6.3	6.5	5.9	6.3	6.2	55.0
Strategic defense	13.8	14.0	14.1	14.0	14.9	15.4	14.5	14.5	15.0	15.5	145.8
Other [a]	2.7	3.1	3.4	3.6	3.6	3.5	4.4	4.3	4.3	4.1	37.0
Total	**32.1**	**33.5**	**36.7**	**37.0**	**37.9**	**38.2**	**38.4**	**36.4**	**37.3**	**37.7**	**365.2**

[a] "Other" includes nuclear weapons and strategic control and surveillance.

Strategic Forces

A comparison of US outlays with estimated dollar costs of Soviet activities

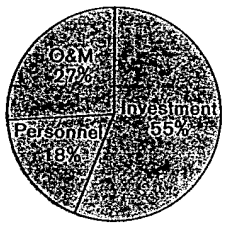
Billion 1981 dollars



Cumulative, 1972-81

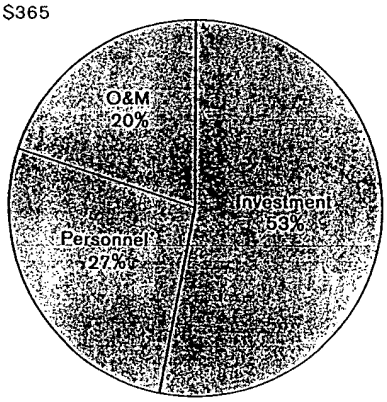
US

Total: $110



USSR

Total: $365



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- A reduction in the number of heavy bombers.
- The deployment of a system for defense against ICBMs, which was quickly deactivated.
- A reduction in strategic interceptor aircraft and surface-to-air missile (SAM) forces.

Intercontinental Attack Forces

This mission consists of all land-based ICBMs, intercontinental SLBMs and the associated submarines, and intercontinental bombers.

Over the 1972-81 period the estimated cumulative dollar costs of the Soviet intercontinental attack forces exceeded comparable US outlays by 80 percent. In 1981, estimated dollar costs of Soviet programs exceeded US outlays by about 50 percent:

- Estimated dollar costs of the Soviet intercontinental attack mission were 6 percent higher in 1981 than they were in 1972; they were much greater in the mid-1970s, however, primarily because of procurement costs associated with the SS-17, SS-18, and SS-19 ICBMs and the D-class SSBNs.

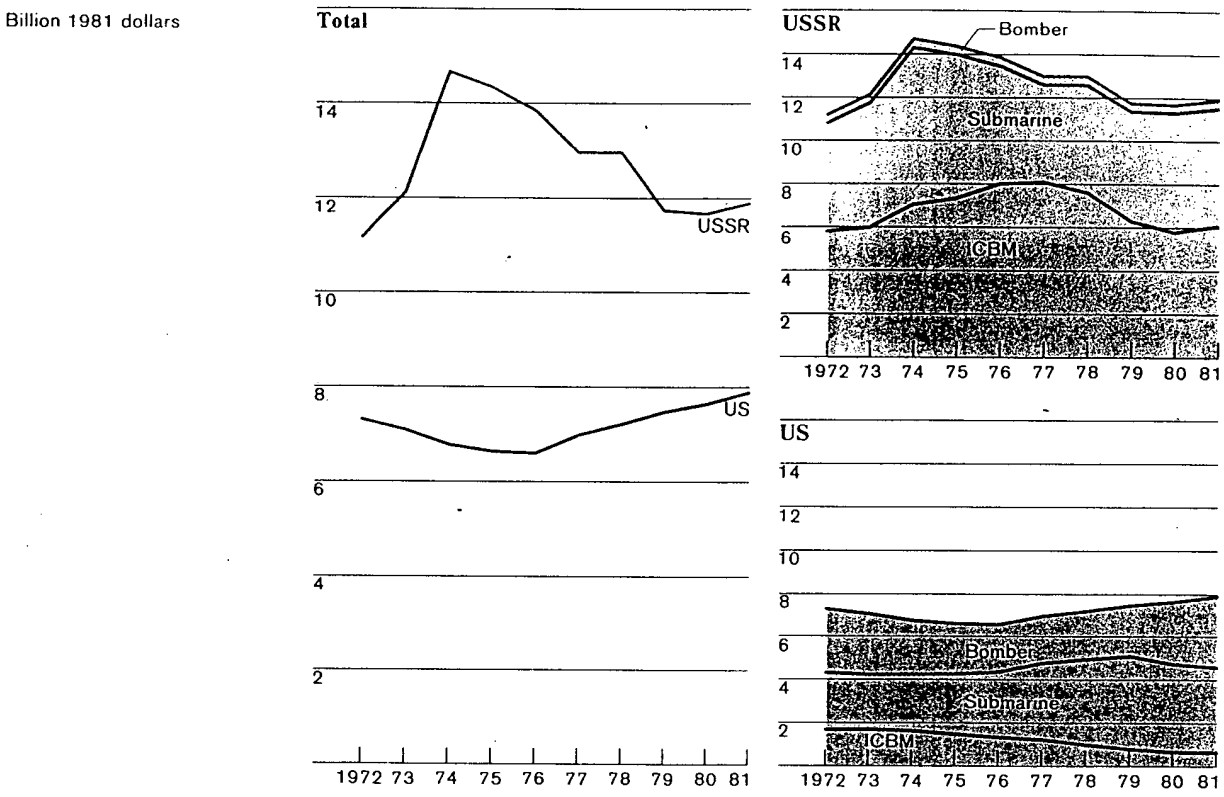
- US spending for intercontinental attack forces fell until 1976 with cuts in both procurement and personnel costs, particularly of intercontinental bombers. Spending for this mission, however, grew an average of almost 4 percent a year from 1976 to 1981 as the United States began to invest in the Trident, air-launched cruise missile (ALCM), and B-52 enhancement programs.

During this period the USSR overtook the United States in number of delivery vehicles and overtook (and far surpassed) the United States in total

	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	Cumulative
Billion 1981 Dollars											
US											
ICBM	1.7	1.7	1.6	1.5	1.3	1.2	1.0	0.8	0.6	0.6	12.0
Submarine	2.6	2.5	2.6	2.8	3.0	3.5	4.0	4.3	4.1	3.9	33.4
Bomber	3.0	2.9	2.6	2.4	2.3	2.2	2.3	2.4	2.9	3.3	26.2
Total	**7.3**	**7.1**	**6.8**	**6.6**	**6.6**	**7.0**	**7.2**	**7.5**	**7.6**	**7.9**	**71.5**
USSR											
ICBM	5.8	6.0	7.0	7.3	8.0	8.1	7.6	6.3	5.8	6.1	67.9
Submarine	5.0	5.8	7.2	6.6	5.5	4.5	5.0	5.1	5.5	5.4	55.5
Bomber	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	4.0
Total	**11.2**	**12.1**	**14.7**	**14.3**	**13.8**	**13.0**	**13.0**	**11.7**	**11.7**	**11.9**	**127.3**

Intercontinental Attack Forces

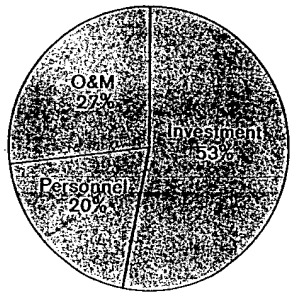
A comparison of US outlays with estimated dollar costs of Soviet activities



Cumulative, 1972–81

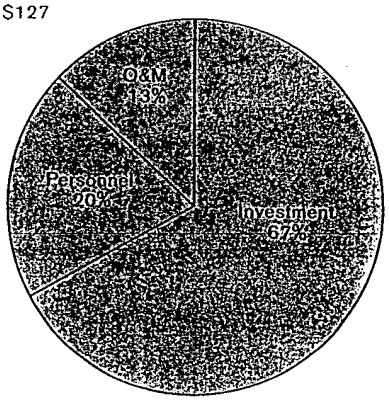
US

Total: $72



USSR

Total: $127



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missile and bomber equivalent throw weight, yield, and equivalent megatons. The United States remained ahead in total online missile reentry vehicles and bomber weapons

Because investment costs were over one-half the total for both countries, their trend set the pattern for total costs. Dollar investment costs for Soviet forces displayed the distinct cyclical pattern already noted, while US investment for intercontinental attack forces fell until procurement costs for the Trident SSBN and the ALCM caused them to rise.

Intercontinental Ballistic Missiles. The estimated cumulative costs of Soviet ICBM programs over the period were five and a half times as large as corresponding US outlays. In 1981, estimated Soviet dollar costs were 10 times as large as comparable US outlays.

The total number of Soviet ICBM launchers decreased slightly from 1972 to 1981:

- In 1972 the Soviets completed the deployment of SS-9, SS-11, and SS-13 forces and started to deactivate the older SS-7s and SS-8s.

- In the middle 1970s the Soviets began to replace their single-RV SS-9 and SS-11 ICBMs. The SS-11 was replaced with improved variants (the Mod 2 and Mod 3) and two new systems, the SS-17 and SS-19; the SS-9 was replaced with the new SS-18. Each of the three new systems was more accurate, could carry MIRVs, and was deployed in a more survivable silo.

By midyear 1981, the Soviet ICBM force included approximately 480 SS-11 Mod 2 and Mod 3 variants and 758 SS-17, SS-18, and SS-19 launchers, most of which replaced older launchers. Altogether, there were 122 fewer launchers in 1981 than there had been in 1972. (S)

The United States maintained a constant number of launchers, but improved its force by:

- Replacing remaining Minuteman I and 50 Minuteman II ICBMs with the more accurate and MIRVed Minuteman III.

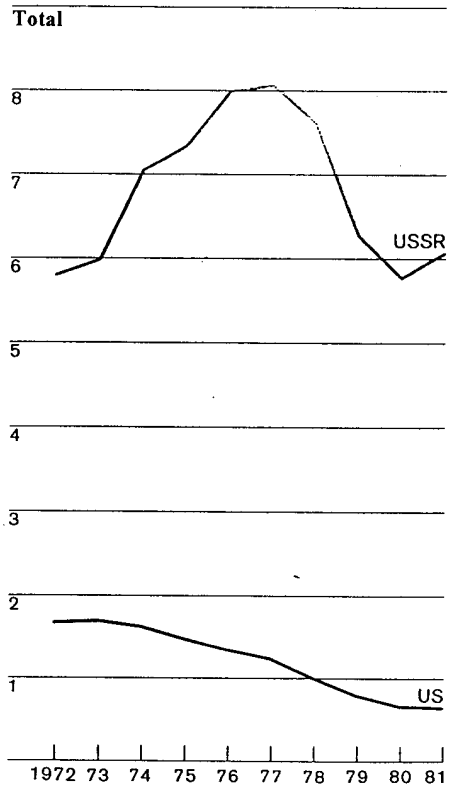
	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	Cumulative
Billion 1981 Dollars											
US	1.7	1.7	1.6	1.5	1.3	1.2	1.0	0.8	0.6	0.6	12.0
USSR	5.8	6.0	7.0	7.3	8.0	8.1	7.6	6.3	5.8	6.1	67.9

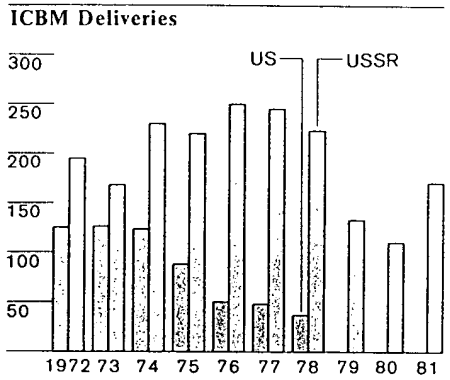
1

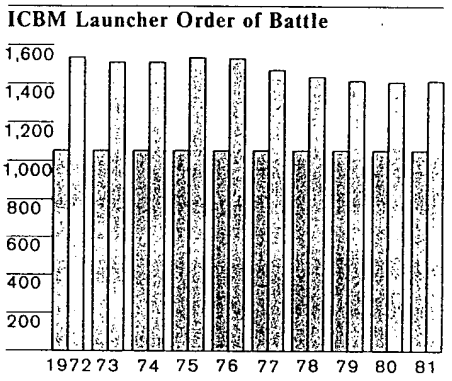
Intercontinental Ballistic Missiles

A comparison of US outlays with estimated dollar costs of Soviet activities

Billion 1981 dollars



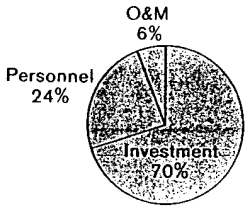




Cumulative, 1972-81

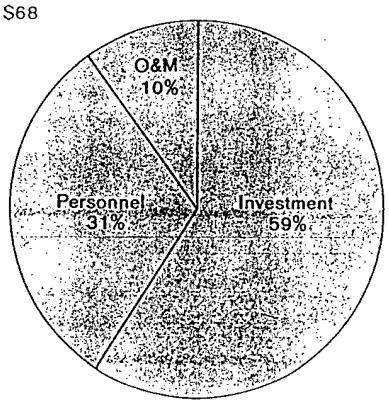
US

Total: $12



USSR

Total: $68



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- Retrofitting Minuteman IIIs with an improved guidance system and beginning, in 1980, to retrofit 300 with higher yield MIRVs.

- Further hardening Minuteman silos and improving command and control capabilities. Among the specific improvements were better suspension systems for the missiles and ground electronics, debris bins on the launch closures to protect the silos from postattack debris, improved protection from electromagnetic pulses, and more advanced retargeting capabilities.

In 1981 US ICBM forces consisted of 550 Minuteman IIIs, each having three RVs; 450 Minuteman IIs with a single RV; and 53 older liquid-fueled Titan IIs with a single RV. The Titan II lacks the accuracy of the Minuteman but carries a larger payload.

Ballistic Missile Submarines for Intercontinental Attack. This category includes all US ballistic missile submarines and the associated missiles and those Soviet ballistic missile submarines and missiles that are believed to have intercontinental, rather than peripheral, attack missions. Also included on both sides are the SSBN tenders.

The estimated cumulative dollar costs of these Soviet activities were about 65 percent greater than the corresponding US outlays over the period. For 1981 alone the estimated dollar costs of Soviet activities were about 40 percent greater than US outlays.

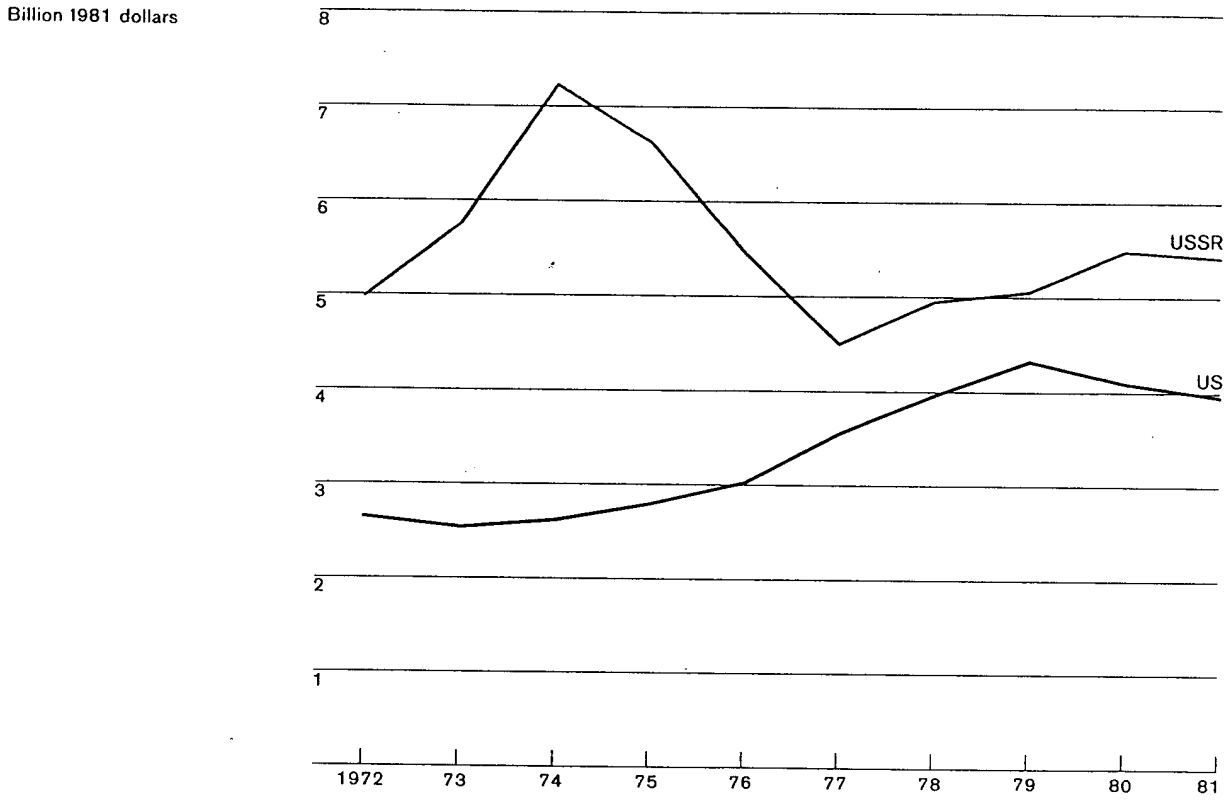
Although the estimated dollar costs of Soviet SLBM forces were less than 10 percent greater in 1981 than they had been in 1972, the figure fluctuated during the decade in relation to procurement cycles for SSBNs. Procurement of the Y-class SSBN ended in the early 1970s; procurement of the D-class peaked in the middle 1970s; and procurement costs associated with the Typhoon class began in the late 1970s.

Annual US SSBN outlays were relatively constant from 1972 through 1975 because procurement of the present US SSBN force had been completed before 1972; the procurement of new types of SLBMs in this period kept outlays from falling. The start of the Trident SSBN program

	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	Cumulative
Billion 1981 Dollars											
US	2.6	2.5	2.6	2.8	3.0	3.5	4.0	4.3	4.1	3.9	33.4
USSR	5.0	5.8	7.2	6.6	5.5	4.5	5.0	5.1	5.5	5.4	55.5

Submarines for Intercontinental Attack

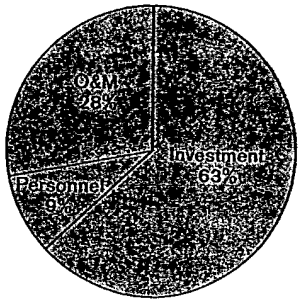
A comparison of US outlays with estimated dollar costs of Soviet activities



Cumulative, 1972-81

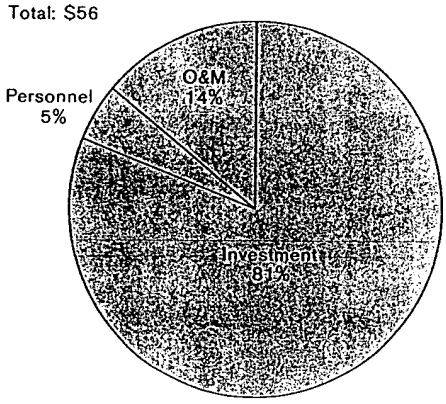
US

Total: $33



USSR

Total: $56



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caused outlays to grow 40 percent overall during the last six years of the period, though delays in the program caused a slight drop in outlays between 1979 and 1981.

The Soviet ballistic missile submarine force increased by 27 submarines, from 36 in 1972 to 63 in 1981:

- From 1972 to 1975 the Soviet Union deployed an additional eight Y-class SSBNs.
- A total of 34 D-I, D-II, and D-III SSBNs were deployed between 1972 and 1981.
- In 1977, in order to comply with SALT I limitations on the number of modern SSBNs and SLBM launchers, the USSR began to retire the older Y-I SSBNs as it deployed D-IIIs.
- The first Typhoon-class SSBN began sea trials in mid-1981. However, the SLBM that the Typhoon will carry is not yet operational.

The US SSBN fleet was reduced in size during the period, but its capabilities were steadily improved:

- In the early 1970s many US SSBNs were converted to carry a new SLBM, the Poseidon C-3.

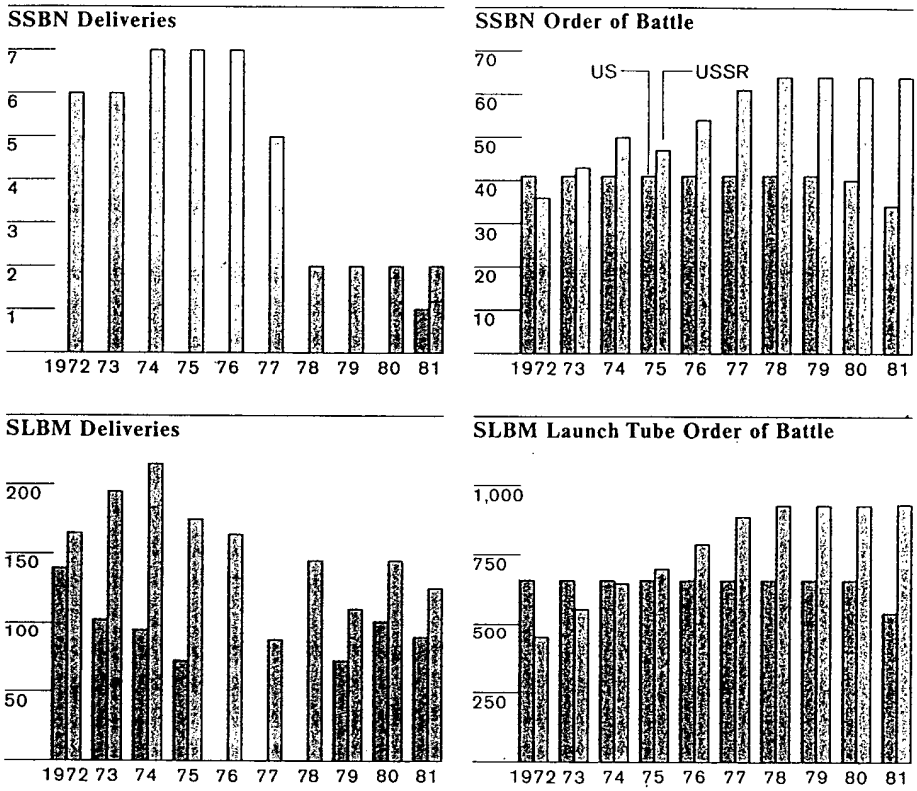
- In 1976 the United States began construction of a new class of SSBN to carry the new Trident SLBM, which has a longer range and more powerful warhead. The first SSBN of that program (the Ohio) was commissioned at the end of 1981, and the second (the Michigan) has been launched.

- The Trident C-4 missile is being backfitted on 12 older Benjamin Franklin–class SSBNs.

At the end of fiscal year 1981 the United States had 34 SSBNs with 16 launch tubes each, for a total of 544 tubes. Twenty-five of these were equipped with the Poseidon C-3, or were being converted to the Trident C-4. Six had completed the conversion and been deployed. The remaining three were still armed with the Polaris A-3, but they are older SSBNs that will be either dismantled or converted to attack submarines by the removal of the launch tubes for their intercontinental-range missiles.

In 1981 the Soviet fleet still had 26 of the older Y-I SSBNs. Some of them are probably being converted to attack submarines. Each Y-I has 16 launch tubes equipped with the SS-N-6 SLBM. One Y-II, which carries 12 SS-N-17s, had also been deployed. The 18 D-I SSBNs each carry 12 SS-N-8s, and the four D-IIs each carry 16; the 12 D-IIIs each carry 16 SS-N-18s.

Submarines for Intercontinental Attack



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Intercontinental Bombers. This component consists of bombers and related tanker aircraft. The Soviet strategic aircraft are the TU-95 Bear and the M-4 Bison (some of the Bisons are configured as tankers).[8] The principal US aircraft are the B-52 and FB-111 bombers and the KC-135 tankers. The US short-range attack missile (SRAM) and the air-launched cruise missile (ALCM) are also included in this mission.

Cumulative US outlays for intercontinental bombers over the period were six and a half times as large as the estimated cumulative dollar costs of comparable Soviet activities. The difference reflects the much greater emphasis the United States attaches to long-range manned bombers.

US outlays for intercontinental bombers were about 10 percent greater in 1981 than they had been in 1972. They were considerably less during most of the 1970s, however, when the B-52 fleet was being reduced from 397 (1972) to 316 (1981). The bomber force was improved with the procurement of SRAMs for both the B-52s and FB-111s.

Near the end of the decade a decision was made to extend the service life of the B-52 and use it as a carrier for the ALCM. These extension and refurbishment programs, along with associated O&M costs, were the cause of increased US outlays at the end of the period.

Because neither side procured any intercontinental bombers during 1972-81, estimated investment costs did not dominate the trends and totals as they did for ICBMs and SSBNs. Estimated dollar costs for O&M were most significant on the Soviet side, while for the United States the distribution was about equal.

[8] The Soviet Backfire bombers are included in the peripheral attack and naval missions because we believe this is how the Soviets intend to use them. There is, however, some controversy in the Intelligence Community about the range of this aircraft.

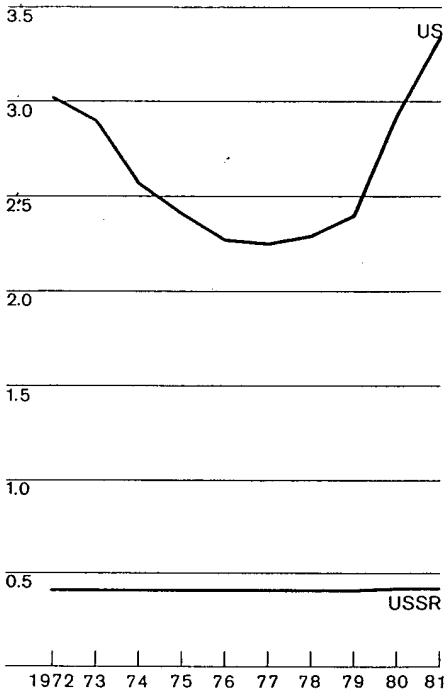
	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	Cumulative
Billion 1981 Dollars											
US	3.0	2.9	2.6	2.4	2.3	2.2	2.3	2.4	2.9	3.3	26.2
USSR	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	0.4	4.0

Intercontinental Bomber Forces

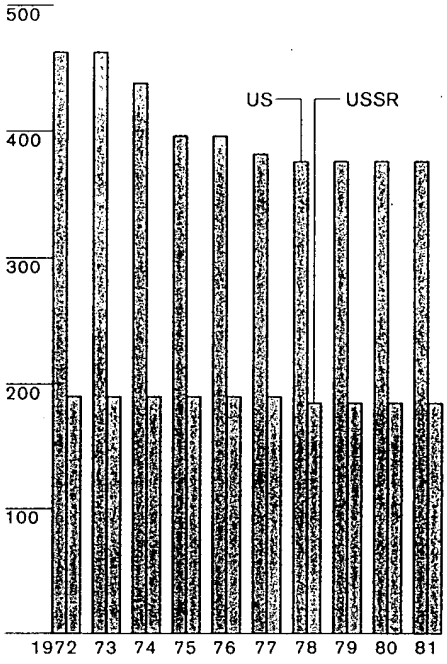
A comparison of US outlays with estimated dollar costs of Soviet activities

Billion 1981 dollars

Total



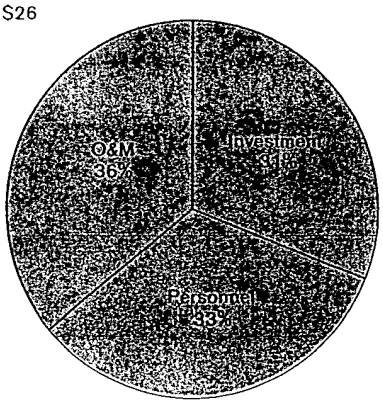
Aircraft Order of Battle



Cumulative, 1972–81

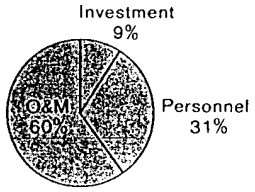
US

Total: $26



USSR

Total: $4



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Strategic Peripheral Attack Forces

This category consists of forces assigned strategic targets along the periphery of the Soviet Union. It includes medium- and intermediate-range ballistic missiles (MRBMs and IRBMs), medium bombers, older diesel-powered ballistic missile submarines that formerly had intercontinental attack missions, and submarine tenders.[9] The primary targets of these forces are in Western Europe or China.

The United States has no direct counterpart to these peripheral attack forces in terms of a DPPC mission, although certain US missiles, tactical aircraft, and submarines could perform similar tasks.[10]

The estimated cumulative dollar costs of the Soviet peripheral attack mission over the decade totaled $55 billion, and they rose at an average annual rate of 4 percent. In this mission, as in the intercontinental attack mission, the annual dollar costs of missiles outweighed those of bombers and submarines. The dollar costs of Soviet peripheral land-based ballistic missiles grew at an average rate exceeding 6 percent a year. Bomber costs increased slightly.

The rapid increase in peripheral attack missile costs was due to the procurement of the three-MIRV mobile SS-20 in the mid-1970s. By 1981, the SS-20 accounted for over 40 percent of the costs of the peripheral attack mission and had supplanted its predecessors, the SS-4 MRBM and the SS-5 IRBM, as the most expensive peripheral attack system. SS-4s and SS-5s made up more than 50 percent of the costs of the peripheral attack mission in 1972, but declined to 20 percent by the end of the decade as they were withdrawn in favor of the more accurate and survivable SS-20.

[9] Although some SS-11 ICBMs may have a peripheral attack mission, we have included their costs in the intercontinental attack mission.

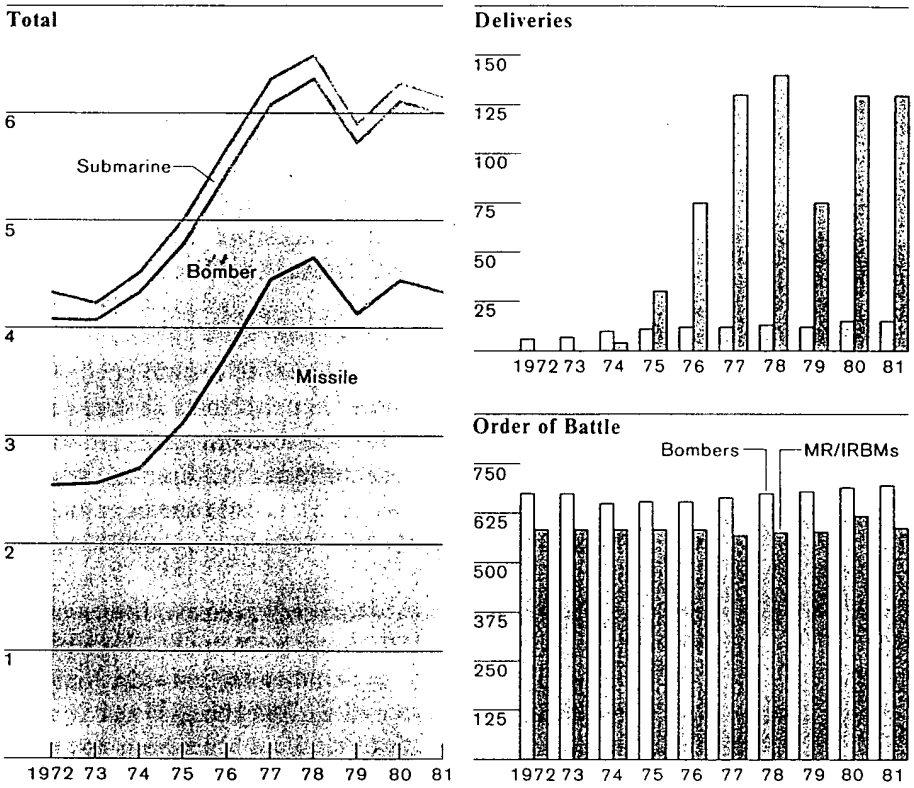
[10] US DPPC mission definitions place the ground-launched cruise missile (GLCM), the sea-launched cruise missile (SLCM), and the Pershing II MRBM in the category of General Purpose Forces. Their cumulative procurement costs to date, 175 million dollars, are mentioned here to allow comparison with Soviet peripheral attack missile

	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	Cumulative
Billion 1981 Dollars											
Missiles	2.5	2.6	2.7	3.1	3.8	4.5	4.7	4.1	4.4	4.3	36.7
Bombers	1.5	1.5	1.6	1.7	1.7	1.6	1.7	1.6	1.7	1.7	16.3
Submarines	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	0.2	2.0
Total	**4.3**	**4.2**	**4.5**	**5.0**	**5.7**	**6.3**	**6.5**	**5.9**	**6.3**	**6.2**	**55.0**

Soviet Peripheral Attack Forces

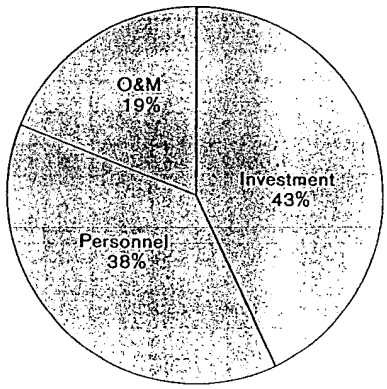
Estimated dollar costs of Soviet activities

Billion 1981 dollars



Cumulative, 1972–81

Total: $55



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Procurement of the Backfire bomber accounted for the small rise in peripheral bomber costs. The older Badger and Blinder bombers were retired from service, eliminating their operating costs.

For the peripheral attack mission as a whole, the cumulative investment and personnel costs were approximately equal over the period. Personnel costs were declining from 1972 to 1981, however, while investment costs were rising. Investment was responsible for the overall growth in this mission.

Strategic Defense Forces

This mission consists of strategic surface-to-air missile systems, strategic interceptor aircraft, antiballistic missile (ABM) systems, and defensive control and warning systems.

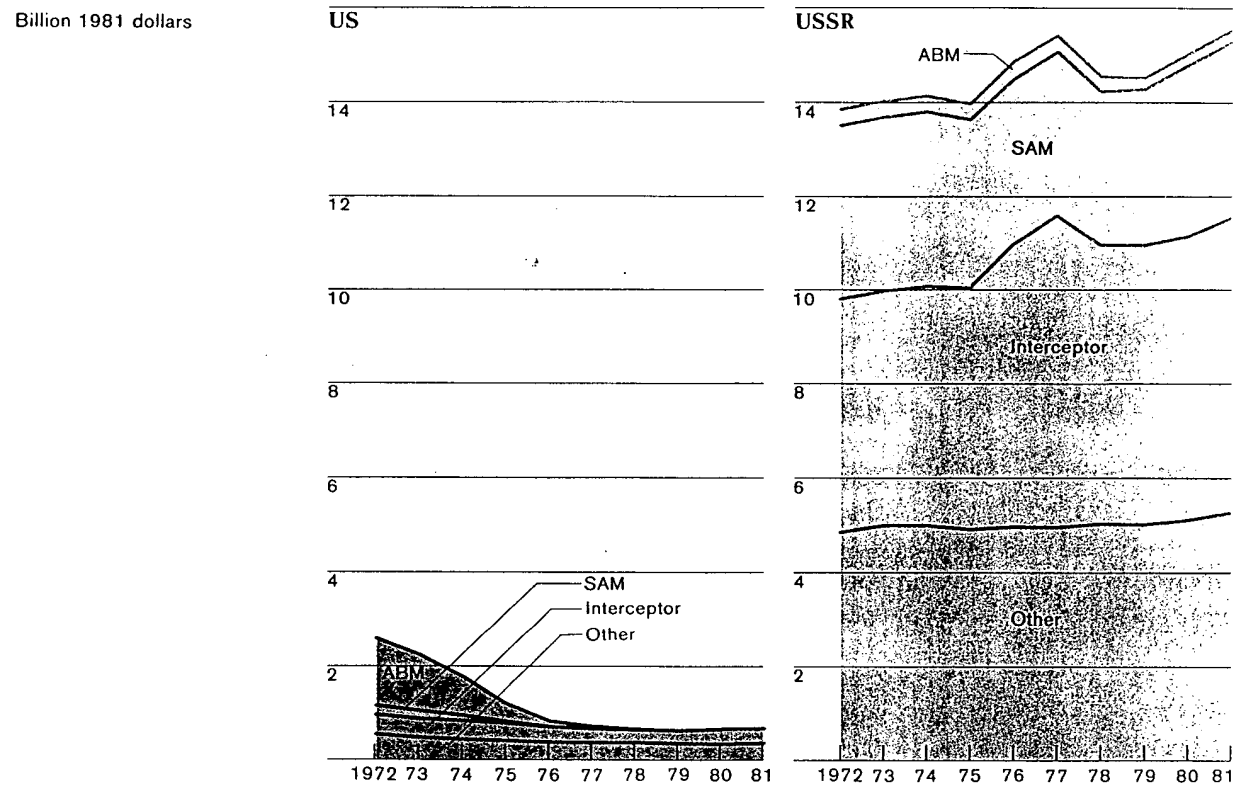
The estimated cumulative dollar costs of Soviet strategic defense during the period were more than 10 times as great as total US outlays for this mission. In 1981 the Soviet dollar estimate was more than 20 times as great. This disparity reflected differences in the two countries' strategic doctrines as well as differences in the bomber threats facing the USSR and the United States.

US strategic policy favored offensive forces over defensive forces aimed at limiting damage from enemy attack. The United States agreed in the ABM Treaty not to deploy a nationwide ABM system for defense against the Soviet ICBM and SLBM threats, and it chose not to commit the resources that would have been necessary to modernize its strategic air defenses against the somewhat limited Soviet bomber threat.

	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	Cumulative
Billion 1981 Dollars											
US											
Interceptor	0.4	0.4	0.4	0.4	0.3	0.3	0.3	0.3	0.3	0.3	3.4
SAM	0.2	0.2	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.5
ABM	1.4	1.2	0.8	0.4	0.1	0.1	0.0	0.0	0.0	0.0	4.0
Other	0.6	0.5	0.5	0.4	0.4	0.4	0.4	0.4	0.4	0.4	4.2
Total	**2.6**	**2.3**	**1.8**	**1.2**	**0.9**	**0.7**	**0.7**	**0.7**	**0.7**	**0.7**	**12.2**
USSR											
Interceptor	5.0	5.0	5.1	5.1	6.0	6.6	5.9	5.9	6.0	6.3	57.0
SAM	3.7	3.7	3.7	3.6	3.5	3.5	3.3	3.3	3.6	3.8	35.7
ABM	0.4	0.3	0.3	0.3	0.4	0.3	0.3	0.3	0.3	0.3	3.2
Other	4.8	5.0	5.0	4.9	5.0	4.9	5.0	5.0	5.1	5.3	49.9
Total	**13.8**	**14.0**	**14.1**	**14.0**	**14.9**	**15.4**	**14.5**	**14.5**	**15.0**	**15.5**	**145.8**

Strategic Defense Forces

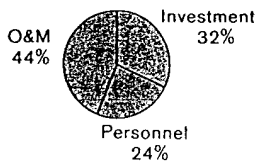
A comparison of US outlays with estimated dollar costs of Soviet activities



Cumulative, 1972-81

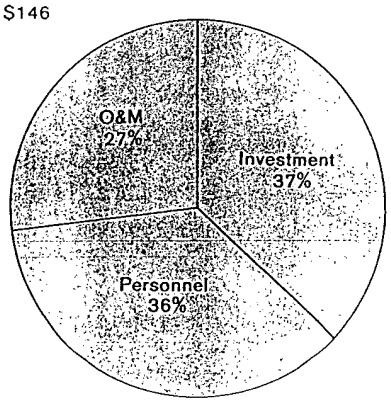
US

Total: $12



USSR

Total: $146



Soviet strategic programs favored more balance between offensive and defensive forces. The Soviets also agreed not to deploy a nationwide ABM system, but they continued to commit substantial resources to defense against bombers. This relatively higher emphasis was influenced by the threat posed by US strategic bombers—a force much larger and more capable than its Soviet counterpart. Soviet bomber defense activities were also influenced by the threat from potentially hostile aircraft in the European and Pacific theaters and in China.

During the 1972-81 period, the Soviet Union:

- Reduced the number of interceptors assigned to strategic defense from about 3,100 to 2,500 while modernizing these forces with the procurement of about 2,300 SU-15 Flagon, MIG-25 Foxbat, and MIG-23 Flogger interceptors.

- Kept the size of the strategic SAM force stable (at about 1,200 launch sites and 9,500 launchers) while improving its firepower with the continued deployment of SA-3 and SA-5 SAMs and the introduction of the SA-10 in late 1980.

- Maintained the Moscow ABM defenses and brought two large battle management radar complexes at Moscow to operational capability.

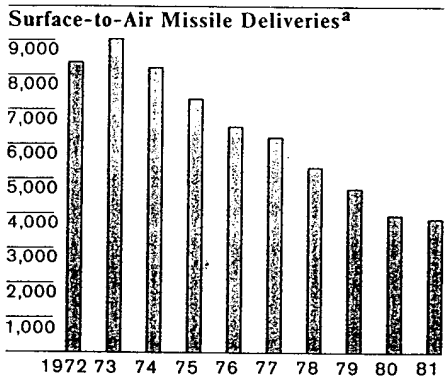
- Completed deployment of the Hen House ballistic missile early warning system and initiated construction near Moscow of a large ABM-related facility, which may perform battle management as well as interceptor tracking and guidance. Subsequently, in 1980, the Soviets undertook what appears to be a major upgrading and expansion of the ABM system.

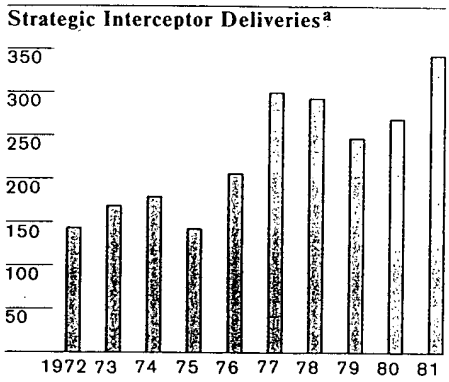
In contrast, the United States:

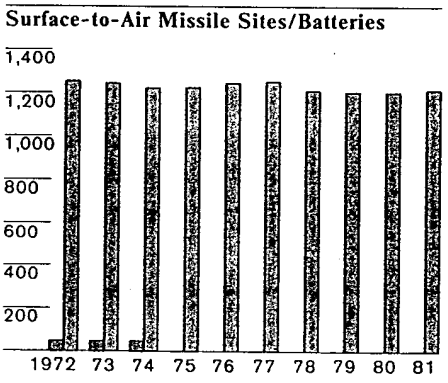
- Reduced its strategic interceptor order of battle from approximately 470 to 260 aircraft. Most of the remaining aircraft were the older F-106s.
- In 1975 completed the deactivation of all strategic defense SAM batteries. The only strategic SAM deployed by the US Army during the period was the Nike Hercules.[11]
- Deployed one ABM facility with 100 launchers in 1975 and then deactivated it in 1976. Costs for the program peaked in the early 1970s.

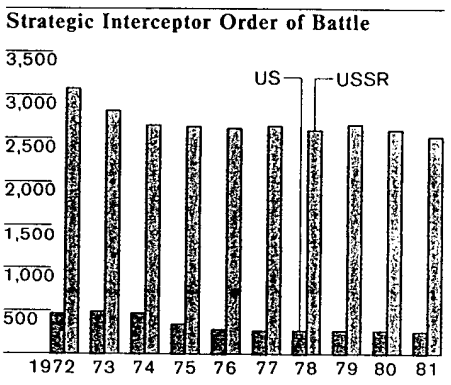
[11] The USAF Bomarc, eliminated in 1973, is not included in the accompanying order-of-battle data illustrated at right.

Strategic Defense Forces









[a] Corresponding US data are not available.

588506 2-83

General Purpose Forces

General purpose forces are defined to include the following DPPC categories:

- Land forces.
- Tactical air forces.
- General purpose naval forces (including ASW, amphibious, and naval support forces).
- Mobility forces (including airlift and sealift forces).

For the 1972-81 period the estimated cumulative dollar costs of Soviet general purpose forces were about 65 percent more than corresponding US outlays. Estimated dollar costs of Soviet forces were 50 percent more than US outlays in 1972 and about 45 percent more in 1981. The disparity was greatest in 1976, when it was almost 80 percent.

The dollar costs of Soviet general purpose forces grew at a fairly steady rate over the period as the USSR modernized these forces, increased the buildup along the Sino-Soviet border and in Warsaw Pact areas, and increased its naval force levels and operations. Naval forces showed the most rapid rate of growth, with mobility closely following.

US outlays for general purpose forces have grown rapidly since 1973 as these forces were modernized. The largest growth was in the tactical air mission, although costs for the land and naval forces also increased significantly.

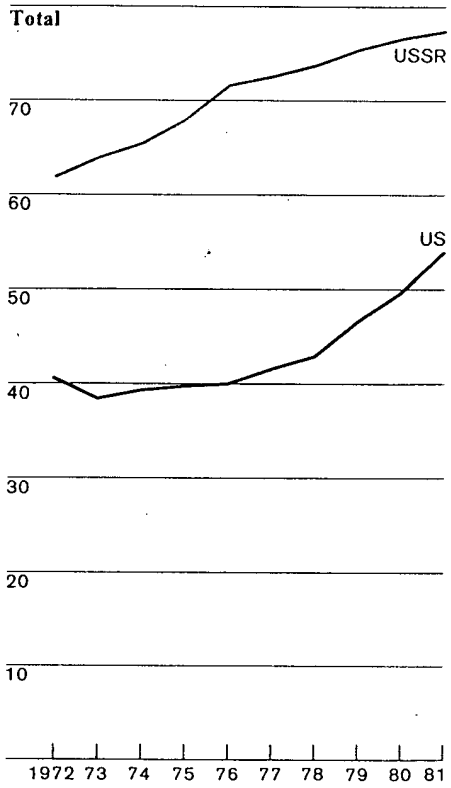
	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	Cumulative
Billion 1981 Dollars											
US											
Land	13.5	12.8	13.7	13.5	13.5	14.9	15.5	16.5	17.1	18.3	149.2
Tactical air	12.8	12.3	12.1	12.5	12.9	13.0	13.4	14.9	16.7	18.3	138.9
Naval	11.5	11.4	11.8	12.1	12.1	12.2	12.6	13.4	13.8	15.0	126.1
Mobility [a]	2.8	2.1	1.9	1.8	1.7	1.6	1.6	1.9	2.2	2.6	20.4
Total	**40.7**	**38.6**	**39.5**	**39.9**	**40.2**	**41.8**	**43.1**	**46.8**	**49.8**	**54.1**	**434.5**
USSR											
Land	38.9	40.3	40.7	41.4	42.8	42.9	43.9	44.7	46.2	46.7	428.3
Tactical air	9.0	10.2	10.1	10.9	12.4	12.0	11.6	12.2	11.5	11.3	111.1
Naval	11.5	11.0	12.2	12.5	13.2	14.3	15.1	15.2	15.8	16.2	137.0
Mobility	2.6	2.5	2.5	3.3	3.4	3.3	3.2	3.4	3.2	3.3	30.7
Total	**61.9**	**64.0**	**65.5**	**68.0**	**71.7**	**72.6**	**73.8**	**75.5**	**76.6**	**77.4**	**707.1**

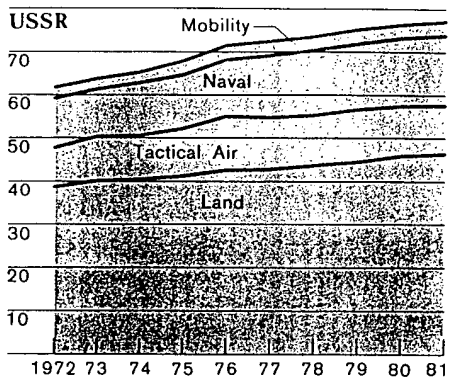
[a] See discussion on page 70.

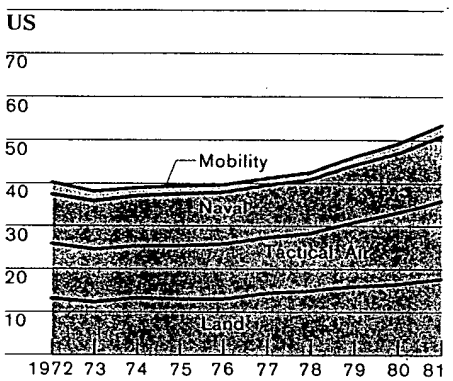
General Purpose Forces

A comparison of US outlays with estimated dollar costs of Soviet activities

Billion 1981 dollars



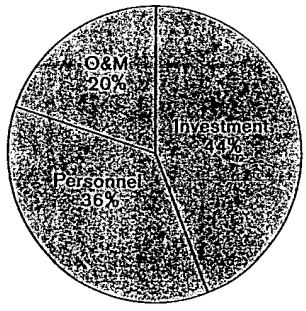




Cumulative, 1972–81

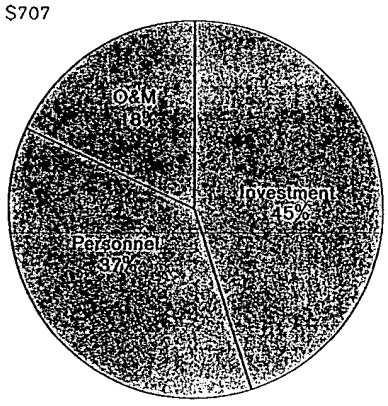
US

Total: $435



USSR

Total: $707



588507 2-83

Land Forces

On the US side, this mission includes those US Army and Marine elements in the DPPC categories of Land Division Forces and Land Theater Forces. On the Soviet side, it includes all of the Ground Forces combat elements and some other forces—such as ground attack helicopters and portions of the Border Guards—that have roles similar to those of the US units in the two DPPC categories.

Over the 1972-81 period the estimated cumulative dollar costs of Soviet land forces were nearly three times as large as the corresponding US outlays. This margin was maintained each year until 1979. Growth in US outlays later narrowed the gap, but in 1981 the dollar costs of Soviet forces were still about two and one-half times the US outlays.

The cost trends for the two countries have been dissimilar. Estimated Soviet costs have grown steadily. US outlays, on the other hand, fluctuated in the early years but since 1976 have grown. In 1981, US outlays were 35 percent more than their 1972 level.

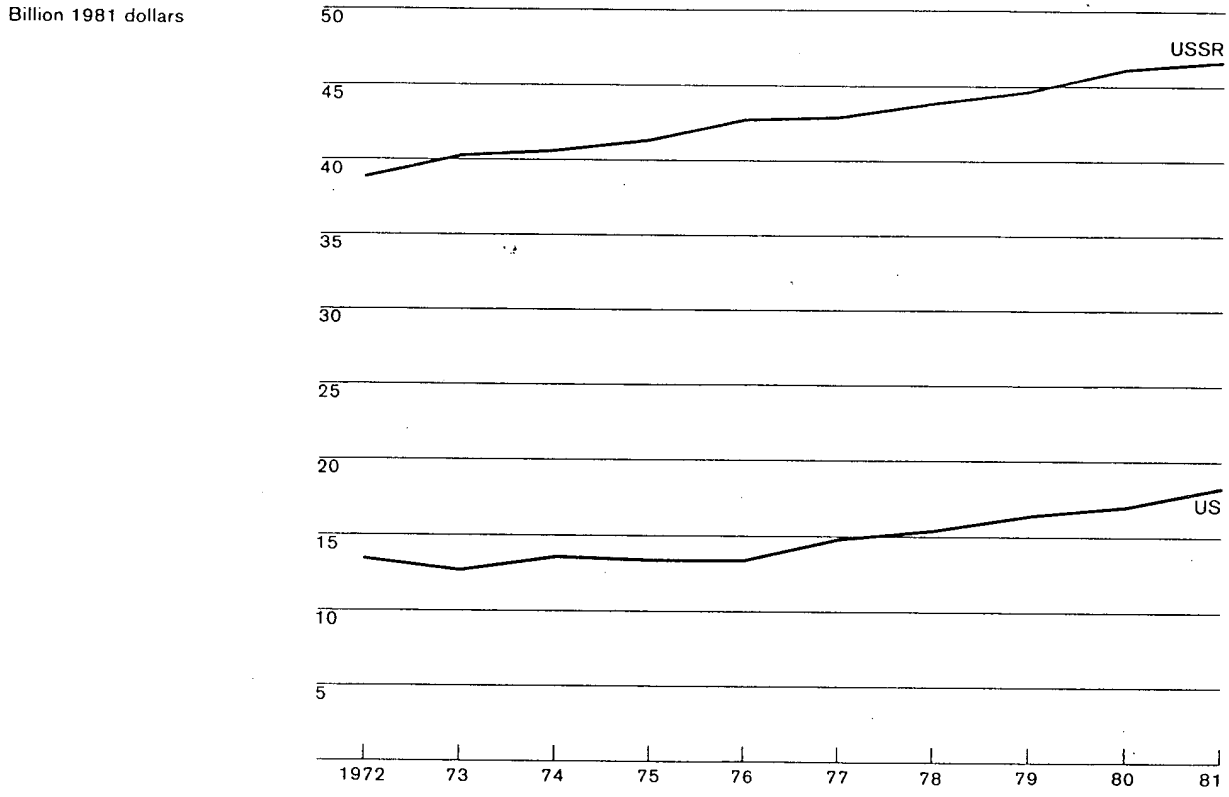
The manpower and weapons inventory of Soviet land forces expanded during 1972-81 as the USSR increased the size of its divisions and added 16 combat divisions, bringing the total to 185 in 1981. This accounted for a manpower increase of 285,000 troops. Other improvements included:

- The procurement of 23,000 increasingly expensive tanks, primarily the T-64 and T-72 and their improved versions. We estimate that in 1981 the active medium tank inventory contained about 48,000 tanks.
- Modernization of the armored vehicle fleet with the procurement of about 40,000 armored vehicles. These were primarily BMP infantry combat vehicles, but many BRDM reconnaissance vehicles were also procured.

	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	Cumulative
Billion 1981 Dollars											
US	13.5	12.8	13.7	13.5	13.5	14.9	15.5	16.5	17.1	18.3	149.2
USSR	38.9	40.3	40.7	41.4	42.8	42.9	43.9	44.7	46.2	46.7	428.3

Land Forces

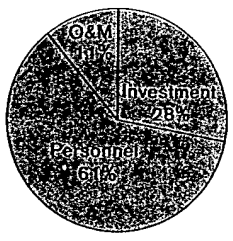
A comparison of US outlays with estimated dollar costs of Soviet activities



Cumulative, 1972–81

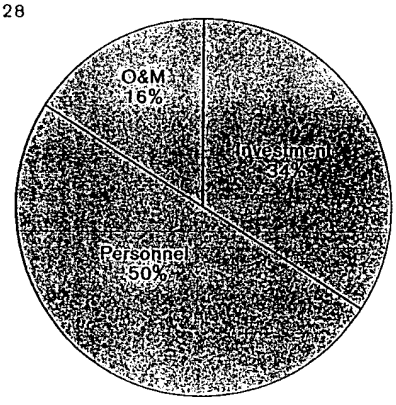
US

Total: $149



USSR

Total: $428



588508 2-83

- The introduction of new artillery, including 122-mm and 152-mm self-propelled howitzers, 152-mm and 203-mm self-propelled guns, and new developments in tactical SAMs and surface-to-surface missiles.
- The deployment in 1974 of the MI-24 Hind, the first Soviet helicopter designed specifically as a gunship. In 1981 the USSR had over 1,200 Hinds and MI-8 Hip helicopters, designed for ground attack missions.

The United States also modernized and expanded its land forces during the period. These improvements were characterized by:

- Manpower levels that were 100,000 higher in 1981 than in 1972.
- The procurement of 5,500 tanks in the M60 series and production of a new tank, the M1, in 1981. This was the first new tank to be produced in the United States in 20 years. A number of M48 tanks were converted to modern configurations.
- Expansion of the armored vehicle inventory through the procurement of about 6,500 M113 troop carriers and M113 variants used in other roles.
- Improvements to the 155-mm and 8-inch self-propelled howitzers and introduction of a new 155-mm towed howitzer.
- Modernization of the AH-1 Cobra attack helicopter. In 1981 the Army and Marine inventories included almost 1,000 of these helicopters.

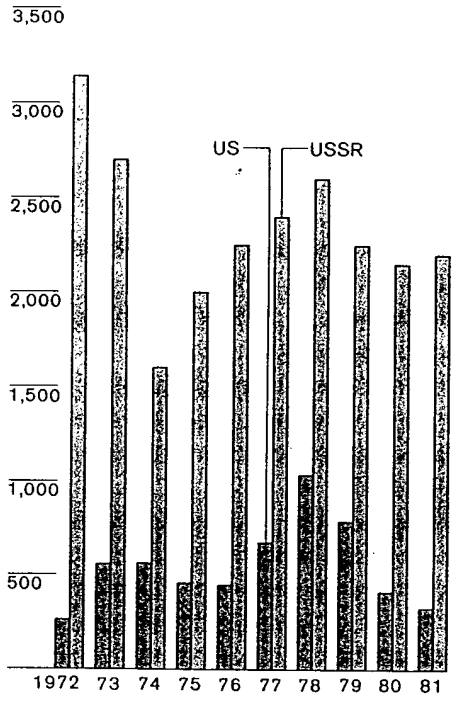
Manpower, procurement, and inventory levels all reflect the Soviet Union's vastly greater requirement for land forces. We estimate that in 1981 the USSR had three times as many men in land forces as the United States. It also had four times as many main battle tanks, three times as many armored troop carriers, and over four times as many major artillery pieces.

In the land forces mission, personnel accounted for 50 percent of the estimated Soviet dollar costs and 60 percent of US outlays. The Soviet dollar costs increased steadily over the period as the divisions expanded in size and in number. US personnel costs fell in 1973 and rose gradually throughout the rest of the period; by 1981 they had surpassed their 1972 level.

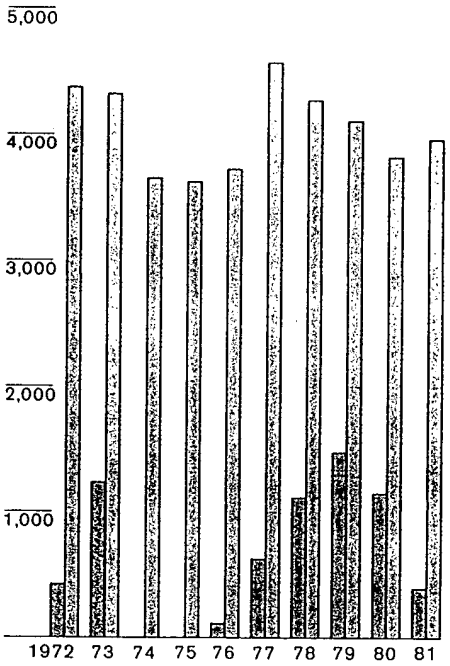
Investment costs reflected both countries' procurement of increasingly sophisticated land armaments. The estimated dollar costs for Soviet investment showed a general increase over the period. In the United States, investment costs, like the costs for the mission as a whole, declined through the mid-1970s, but by 1981 they had risen to twice their 1972 level. For both countries, tank procurement costs were a major part of total investment costs.

Land Forces

Tank Deliveries



Deliveries of Other Armored Combat Vehicles



588509 2-83

Tactical Air Forces

This mission consists of all land- and sea-based fixed-wing aircraft that are used in a combat role; on the US side it includes multipurpose aircraft carriers and their aircraft, to accord with DPPC definitions. It does not include helicopters used for ground attack nor any aircraft and aircraft carriers whose primary mission is antisubmarine warfare. No strategic defense interceptors have been included in this mission, although in some scenarios they might be assigned to tactical combat.

Over the 1972-81 period, US cumulative costs were 25 percent more than the cumulative dollar costs of comparable Soviet activities. The difference reflects the higher US operations level and the inclusion of US aircraft carriers.[12]

US outlays declined slightly between 1972 and 1974 but increased 50 percent between 1974 and 1981:

- Air Force outlays declined by about 10 percent during 1972-74 but more than doubled during 1974-81.
- US Navy and Marine outlays dropped 15 percent between 1972 and 1978. Costs grew in the last three years of the period, however, and in 1981 they were slightly greater than they had been in 1972.

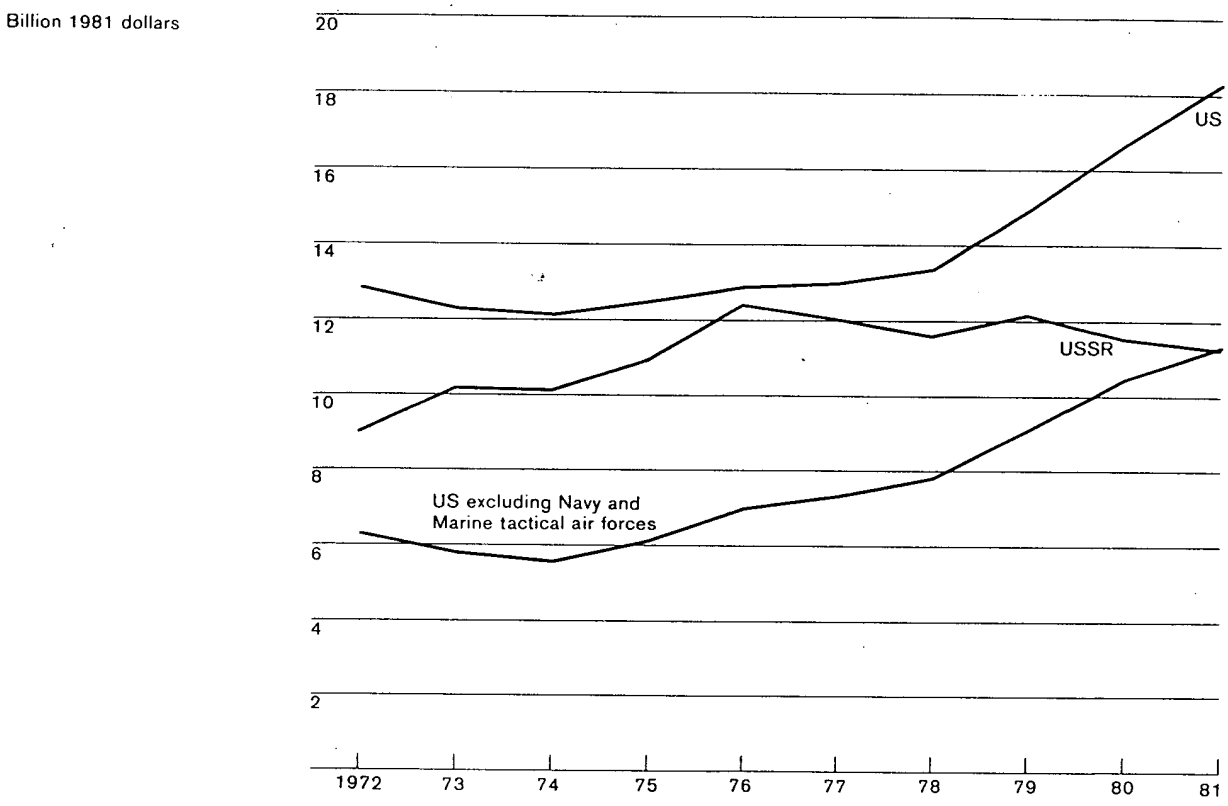
The estimated dollar costs of the Soviet tactical air mission fluctuated with the procurement cycles of various aircraft. In the late 1970s, procurement of several major aircraft ceased or declined. Production of the MIG-23 Flogger G, which began during this period, was cut sharply in the early 1980s to make way for the more capable MIG-29 Fulcrum. (Series production of this aircraft may have begun in 1982.) Despite the fluctuations, estimated Soviet dollar costs for the mission showed a net increase over the period; they were 25 percent greater in 1981 than in 1972.

[12] If US multipurpose aircraft carriers and associated aircraft are excluded, leaving only the US Air Force's tactical air mission, the estimated dollar costs of Soviet tactical air forces for the 1972-81 period were almost 45 percent greater. Until 1980, Soviet outlays exceeded those of the United States, but by 1981 their estimated outlays were approximately equal.

	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	Cumulative
Billion 1981 Dollars											
US											
Air Force	6.3	5.8	5.6	6.1	7.0	7.3	7.8	9.1	10.4	11.3	76.7
Navy and Marines	6.6	6.5	6.6	6.4	5.9	5.7	5.6	5.8	6.2	7.0	62.2
Total	**12.8**	**12.3**	**12.1**	**12.5**	**12.9**	**13.0**	**13.4**	**14.9**	**16.7**	**18.3**	**138.9**
USSR Total	**9.0**	**10.2**	**10.1**	**10.9**	**12.4**	**12.0**	**11.6**	**12.2**	**11.5**	**11.3**	**111.1**

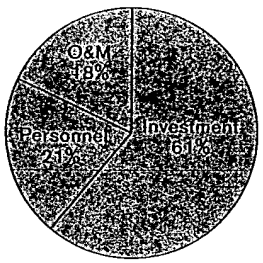
Tactical Air Forces

A comparison of US outlays with estimated dollar costs of Soviet activities

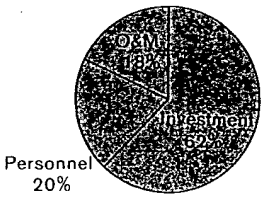


Cumulative, 1972–81

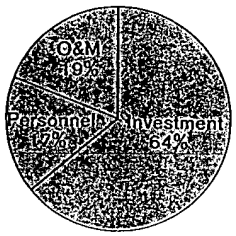
US
Including Navy and Marines
Total: $139



Excluding Navy and Marines
Total: $77



USSR
Total: $111



588510 2-83

Over the period there was a slight decrease in the US order of battle. The Soviet order of battle remained about the same.

The principal tactical aircraft in the US order of battle over the period was the F-4 Phantom, which constituted 40 percent of the force in 1972 and 30 percent in 1981. It is no longer being procured; the Air Force is replacing it with F-15s and F-16s and the Navy with F-14s. Nearly 1,400 of these three aircraft and 600 A-10s were procured over the 1972-81 period.

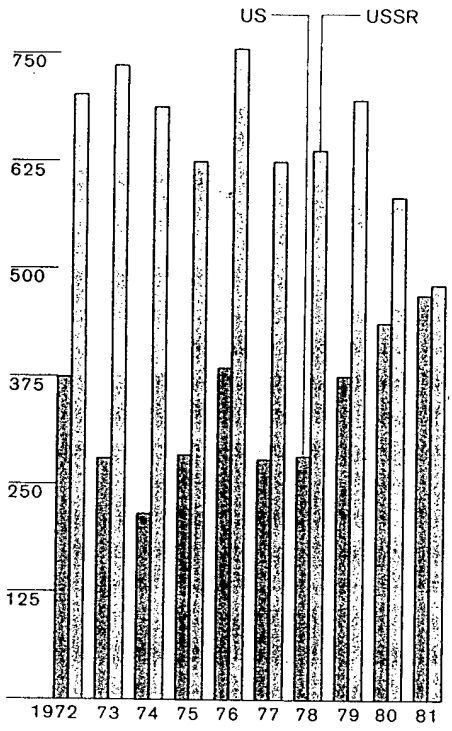
The principal aircraft in the Soviet order of battle in 1972 were MIG-21 Fishbeds (40 percent) and MIG-17 Frescos (20 percent), but by 1981 the Fishbeds had dwindled to 20 percent of the force and Frescos had disappeared altogether. MIG-23/27 Floggers now make up one-third of the tactical air force and will continue to be its major aircraft throughout the 1980s. However, we believe Flogger production has begun to decline in anticipation of the deployment of new, more capable aircraft for this mission.

Although we count some of the Soviet Navy's land-based aircraft in the tactical air mission (the most numerous are TU-16 Badgers), the USSR currently has no multipurpose aircraft carrier. (One is under development.) The 13 US multipurpose aircraft carriers and their associated aircraft represent about 45 percent of total US outlays over the period.

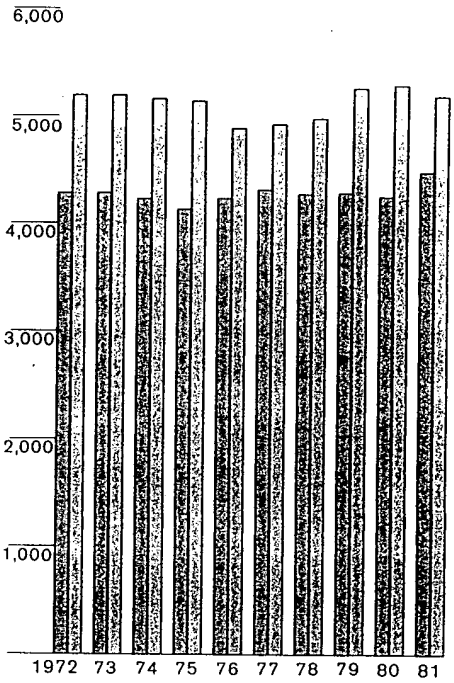
Investment constituted more than 60 percent of the total costs for each country's tactical air mission over the period, but O&M showed the most rapid growth. US O&M outlays grew at an average annual rate of 10 percent, reflecting the higher cost of maintaining increasingly sophisticated aircraft. The dollar costs of Soviet O&M for tactical aviation grew by an average of about 7 percent per year.

Tactical Air Forces

Tactical Combat Aircraft Deliveries



Tactical Combat Aircraft Order of Battle



588511 2-83

General Purpose Naval Forces

Included in the general purpose naval forces are:

- All major (over 3,000 tons) and minor surface combatants.
- Attack submarines.
- ASW aircraft and ASW carriers.[13]
- Amphibious warfare ships.
- Naval forces directly supporting the fleets (auxiliaries).

Not included in this category are multipurpose aircraft carriers, which are assigned to tactical air forces, and strategic missile submarines and their associated tenders, which are assigned to strategic forces. The US Coast Guard is included with the support mission rather than with the general purpose naval forces.

For the 1972-81 period, estimated dollar costs for Soviet general purpose naval forces were slightly more than US outlays, although the two had similar trends.[14] Following a slight decline between 1972 and 1973, estimated dollar costs for Soviet forces grew an average of 5 percent per year through the end of the period. US costs also fell until 1973; since then they have grown at an average annual rate of over 3 percent.

Over the decade, Soviet general purpose naval forces underwent considerable modernization with the procurement of:

- Two Kiev-class carriers for vertical and short takeoff and landing (V/STOL) aircraft.
- Thirteen cruisers, nine destroyers, and 28 large frigates, all equipped with guided missiles.
- Approximately 400 sea- and land-based fixed- and rotary-wing ASW aircraft. Over one-third of these were the KA-25 Hormone helicopter and about one-fourth were the MI-14 Haze.

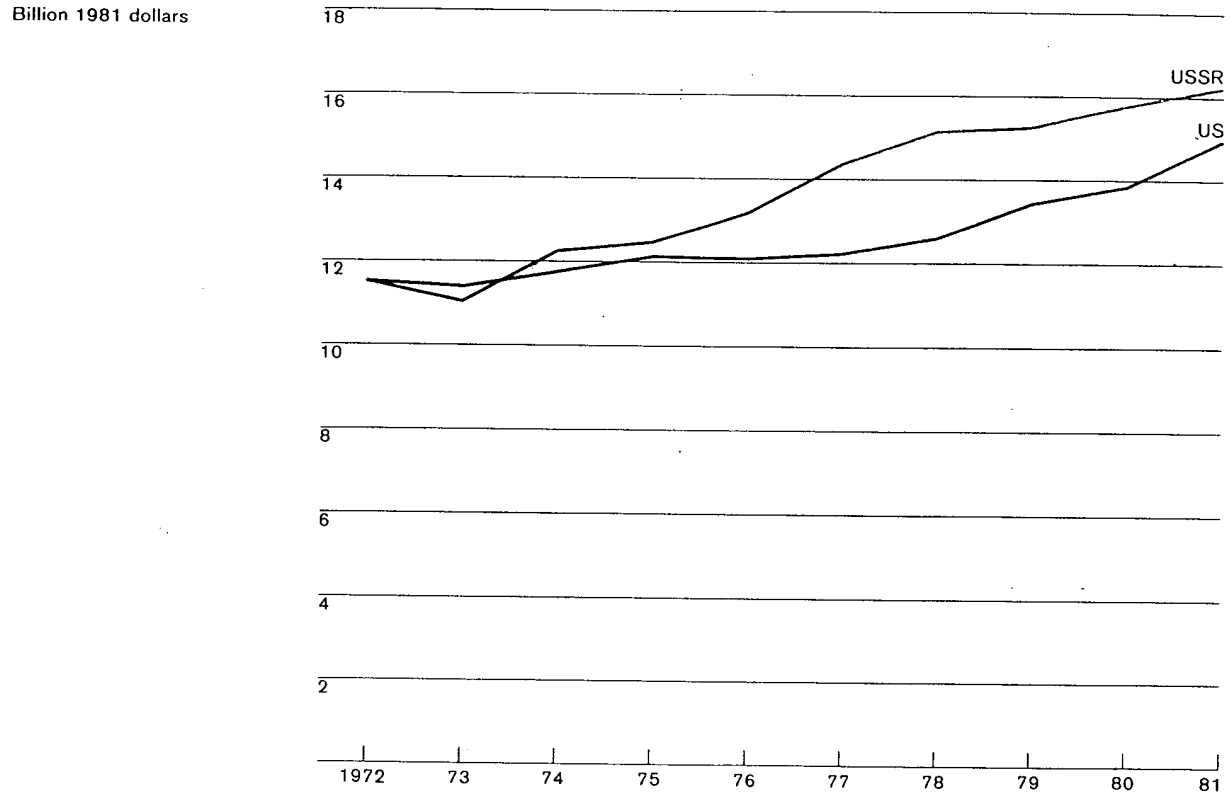
[13] The Soviet Navy's tactical, mobility, and support aircraft are included in their respective missions. (U)

[14] If the US Navy and Marine tactical air force missions (which include carriers) and the Soviet Navy's tactical air forces are included with general purpose naval forces, US outlays were 20 percent greater than the estimated dollar costs of Soviet forces for the 1972-81 period and for 1981

	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	Cumulative
Billion 1981 Dollars											
US	11.5	11.4	11.8	12.1	12.1	12.2	12.6	13.4	13.8	15.0	126.1
USSR	11.5	11.0	12.2	12.5	13.2	14.3	15.1	15.2	15.8	16.2	137.0

General Purpose Naval Forces

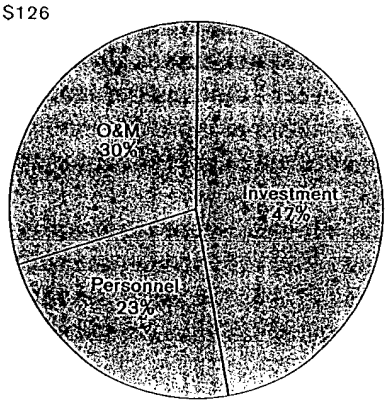
A comparison of US outlays with estimated dollar costs of Soviet activities



Cumulative, 1972–81

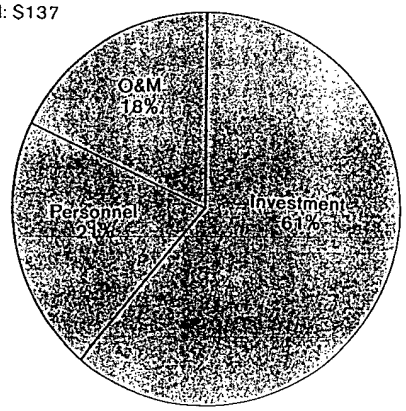
US

Total: $126



USSR

Total: $137



588512 2-83

The US fleet declined during the early 1970s, while World War II–vintage ships were phased out and some were replaced by more modern ships. It then stabilized at slightly over 200 major surface combatants. Acquisitions included:

- Twenty-nine nuclear-powered attack submarines, including 18 Los Angeles–class SSNs. In addition, five Ethan Allen–class SSBNs were converted to attack submarines.
- Six nuclear-powered missile cruisers, 33 destroyers, 17 frigates, and 15 missile frigates. The cruisers' primary mission is antiair warfare, while the destroyers and frigates have an open-ocean escort/ASW role.
- Eleven amphibious warfare ships, including five Tarawa-class amphibious assault ships.
- About 320 new P-3C Orion (land-based) and S-3A Viking (sea-based) ASW aircraft. In addition, about 200 sea-based helicopters were upgraded.

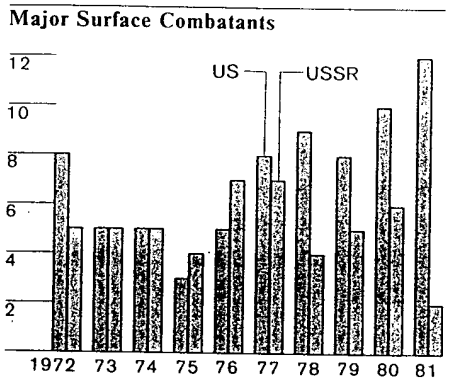
For the USSR, more than 60 percent of the estimated dollar costs for this mission consisted of investment. Over the period, investment increased 60 percent, O&M costs increased about 25 percent, and personnel costs increased less than 5 percent. Roughly one-half of the US total went for investment. The greatest growth for the United States was in O&M, which more than doubled over the period, taking up nearly 30 percent of the total outlays. With the decline in US force levels, personnel costs declined; they accounted for less than 25 percent of total costs.

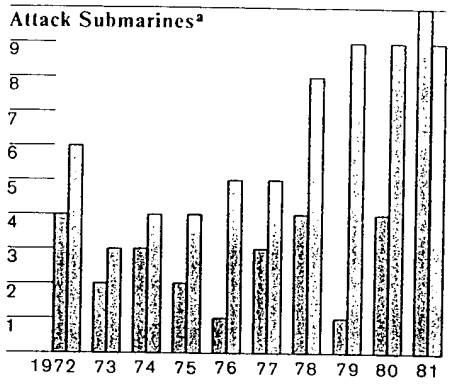
The largest share (about 45 percent) of the dollar costs of investment for Soviet general purpose naval forces over the decade was for submarines. This reflects the USSR's effort to modernize its submarine force—by far the world's largest, and the principal offensive arm of the Soviet Navy. Major surface combatants accounted for about one-fifth of naval investment, although the USSR built many more minor than major combatants. Minor combatants, which accounted for about 10 percent of investment, include mine warfare ships, light frigates, patrol combatants, and small missile and torpedo attack boats. Soviet ASW carriers and ASW aircraft accounted for another 10 percent of naval investment. During the period the USSR also built large numbers of small amphibious warfare ships and auxiliaries, which accounted for another 10 percent of naval investment.

On the US side, major surface combatants took up about 40 percent of investment, followed by general purpose submarines, which received 25 percent of the total. ASW aircraft accounted for about 10 percent, and auxiliary and amphibious warfare ships about 10 percent.

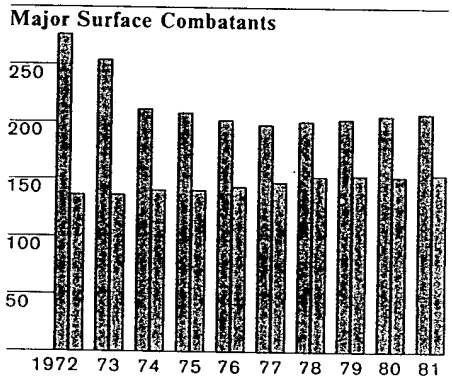
General Purpose Naval Forces

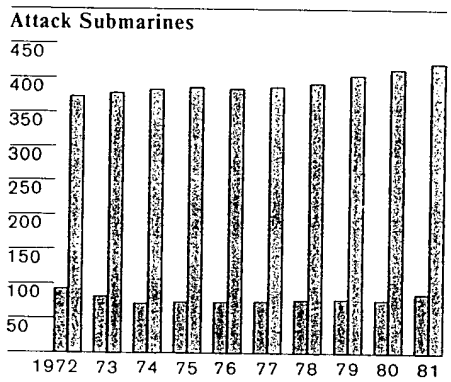
Deliveries

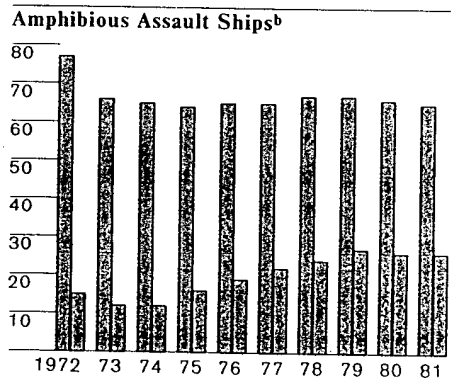


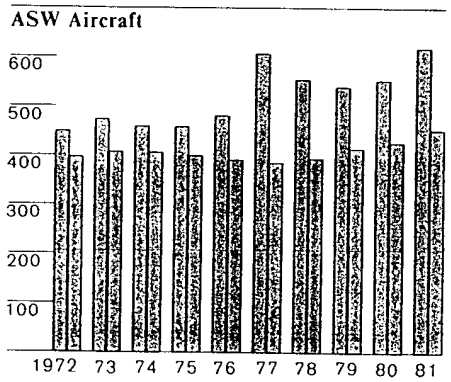


Order of Battle









[a] US deliveries in 1980 and 1981 include five SSBNs converted to attack submarines.

[b] Includes only those ships over 1,000 tons.

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Mobility Forces

The mobility mission includes airlift and sealift activities and military port operations. We have been unable to identify a separate Soviet sealift mission, however, so all Soviet sealift activity is captured in the general purpose naval forces. We believe the dollar cost of this Soviet activity is relatively small. (

US account rules present another problem of definition. A number of US mobility services are charged to other US defense missions, and the mobility mission, as defined by the DPPC, does not reflect these costs. When these "hidden" costs are included, US outlays for the mobility mission are substantially more. In this section, to illustrate the true scope of the US mobility mission, we have arrayed the data to show the total cost of all mobility programs.[15]

For the 1972-81 period, US mobility costs were two-thirds greater than the estimated dollar costs of Soviet activities. In 1981, US costs were twice as high. US airlift costs alone (which are more comparable to the Soviet mission) were 15 percent higher than those estimated for the Soviets over the period and 35 percent higher in 1981. The United States, with its many overseas bases and a need to supply them by sea and by air, has a greater requirement for mobility forces than the USSR. We do not count any rail transport or merchant ships of the USSR or Warsaw Pact countries which serve similar functions, however, and that may cause an understatement of USSR mobility activities.

Both countries expanded their airlift capability during the period:

- The USSR introduced its first military jet transport, the IL-76, and later, a modified version of this plane, which carries more fuel and has a longer range.
- The United States increased the volume of the C-141 cargo cabin (by lengthening the fuselage) and equipped the aircraft with an aerial refueling capability. It also began a program to extend the service life of the C-5A through a wing-modification program.

In 1981 there were approximately 2,000 aircraft in the Soviet airlift mission and approximately half that number on the US side. However, the Soviet figure includes many short-range propeller-driven aircraft. The United States had 500 medium-range C-130s and 300 long-range transports (C-5As and C-141s); the USSR had 600 medium-range AN-12s and 200 long-range aircraft (AN-22s and IL-76s).

[15] For this reason, the US mobility total differs from that shown on page 56. (U)

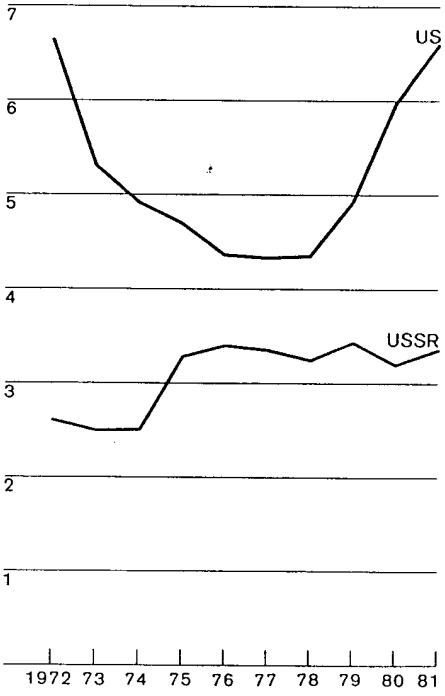
	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	Cumulative
Billion 1981 Dollars											
US	6.6	5.3	4.9	4.7	4.3	4.3	4.3	4.9	5.9	6.6	51.8
USSR	2.6	2.5	2.5	3.3	3.4	3.3	3.2	3.4	3.2	3.3	30.7

Mobility Forces

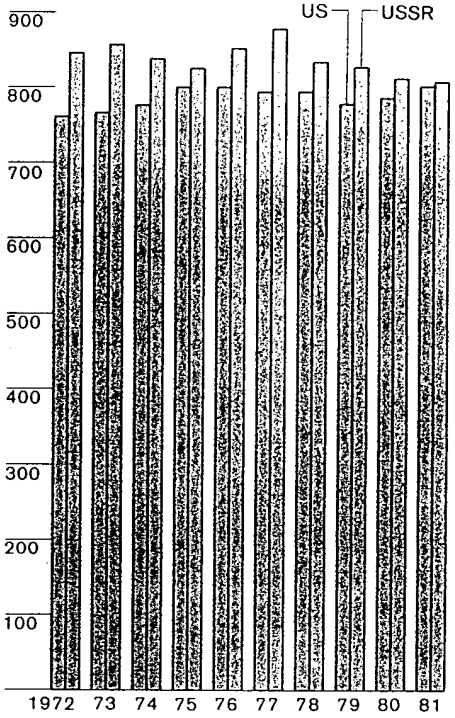
A comparison of US outlays with estimated dollar costs of Soviet activities

Billion 1981 dollars

Total



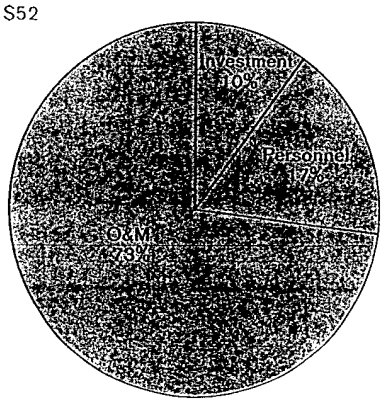
Medium- and Long-Range Transport Order of Battle



Cumulative, 1972–81

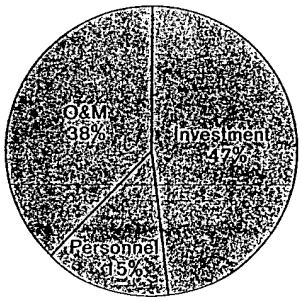
US

Total: $52



USSR

Total: $31



Support Forces

The support mission includes those activities that are required to support the US and Soviet combat forces. Some of the major elements of this mission are:

- The operation and maintenance of fixed military installations.
- Logistic activities, including maintenance and supply.
- Training conducted at other than the unit level, primarily recruit/conscript, officer, and general skills training.
- Administrative activities, including those of centrally located command personnel, recruitment and conscription, personnel management services, and the administrative costs of the United States' participation in NATO and the USSR's administration of the Warsaw Pact Alliance.
- Many other support services, such as satellite communications, hospitals and medical clinics, data processing support, security, investigative and judicial activities, and the maintenance of emergency command posts.

In addition, the defense-related activities of the US Coast Guard and the administration of the Soviet KGB are included.

Over the 1972-81 period the cumulative US outlays for support were slightly more than the estimated dollar costs of Soviet support forces. In 1981 they were almost equal.

The estimated dollar costs of Soviet support activities increased every year except for a brief leveling off in 1977 and 1978. The total increase, almost 15 percent, kept pace with the growth of other missions and reflected an increase in total military manpower and the cost of supporting increasingly sophisticated military forces.

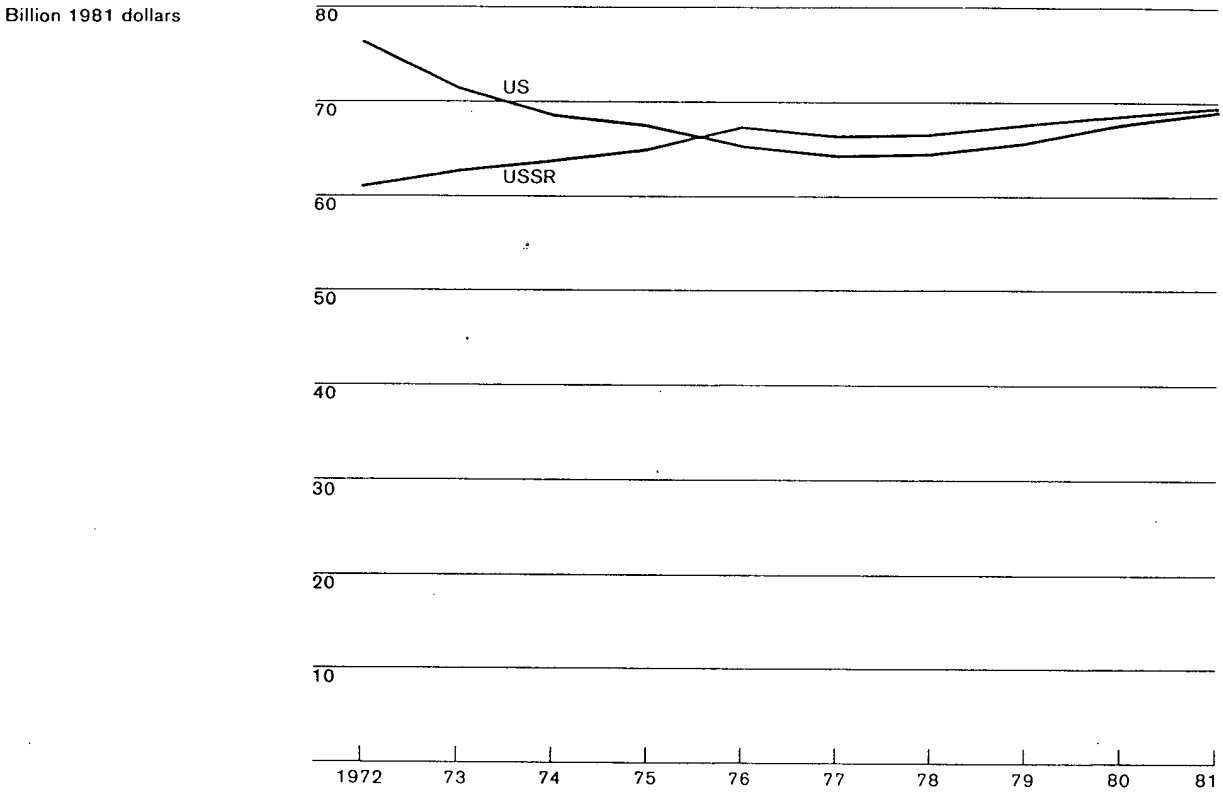
US support costs fell every year from 1972 through 1977, decreasing by 15 percent before they began to grow again in 1978. The decline paralleled the trend in the overall US costs. Decreasing personnel costs led this trend in the support forces.

Over the period, O&M costs were the largest resource category for the United States in the support mission, representing 55 percent of its total costs. Estimated personnel costs had the largest share of the dollar costs for the Soviet mission, but O&M costs were almost as large. The proportion of investment in estimated total costs was relatively small, averaging around 15 percent each year for both countries.

	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	Cumulative
Billion 1981 Dollars											
US	76.4	71.5	68.6	67.6	65.4	64.4	64.6	65.8	67.8	69.1	681.3
USSR	61.1	62.8	63.9	65.1	67.4	66.5	66.7	67.7	68.6	69.6	659.3

Support Forces

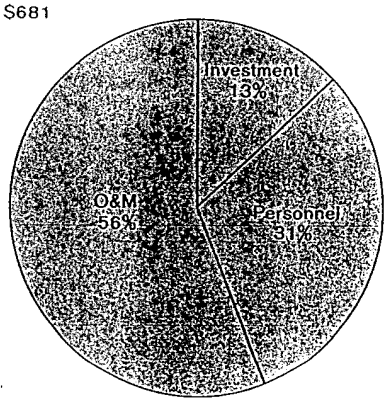
A comparison of US outlays with estimated dollar costs of Soviet activities



Cumulative, 1972–81

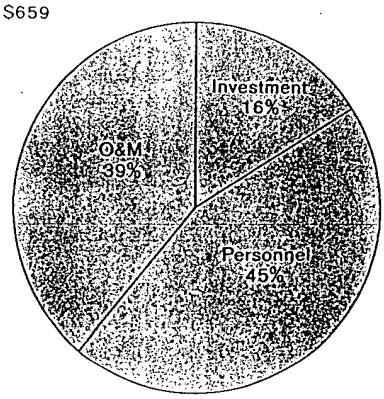
US

Total: $681



USSR

Total: $659



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A significant part of O&M costs in both countries was the pay and benefits of civilian personnel who operate bases and logistics establishments and serve in administrative capacities. These accounted for a third of the annual dollar costs for O&M for the USSR's support mission and even more of the US O&M costs. Utilities and fuel costs and the operation and maintenance costs of auxiliary support activities, especially space and intelligence programs, also accounted for significant shares of O&M. In the USSR, preinduction military training programs, conducted at the secondary school level, accounted for about 15 percent of cumulative O&M costs. The US Department of Defense does not operate a large program of this type.

Cumulative dollar costs for Soviet investment for the support mission were only slightly larger than US investment outlays. A large portion of the construction of airfields, naval bases, and Army and Ground Forces bases are included in the support mission as it is defined by the DPPC, so construction makes up a large share of the investment category relative to other missions.

Estimated dollar procurement costs for Soviet support activities were about equal to corresponding US outlays, but Soviet construction costs were 75 percent more. For both countries a large portion of procurement was for expensive space systems. Other large procurement outlays were for aircraft (for training, intelligence, and logistic roles), electronics and communications equipment, training equipment other than aircraft, and base furnishings and supplies. The US category includes procurement associated with the Coast Guard.

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Estimated Dollar Costs by US Service

This section compares the US Army, Navy (including Marines), Air Force, and defense agencies with their hypothetical Soviet counterparts. We have aggregated the Soviet units as if the USSR structured its military as the United States does to give some idea of the comparative size, in dollars, of Soviet counterpart organizations.

Unlike the United States, the Soviets structure their armed forces into five organizations: the Strategic Rocket Forces (SRF), the Air Defense Forces (PVO), the Ground Forces, the Navy, and the Soviet Air Forces (SAF). In general, there is no one-to-one correspondence: for example, the counterpart to the US Air Force includes the SRF, most of the SAF, and elements of the PVO. Some of the PVO and SAF activities are equivalent to those carried out by the US Army.

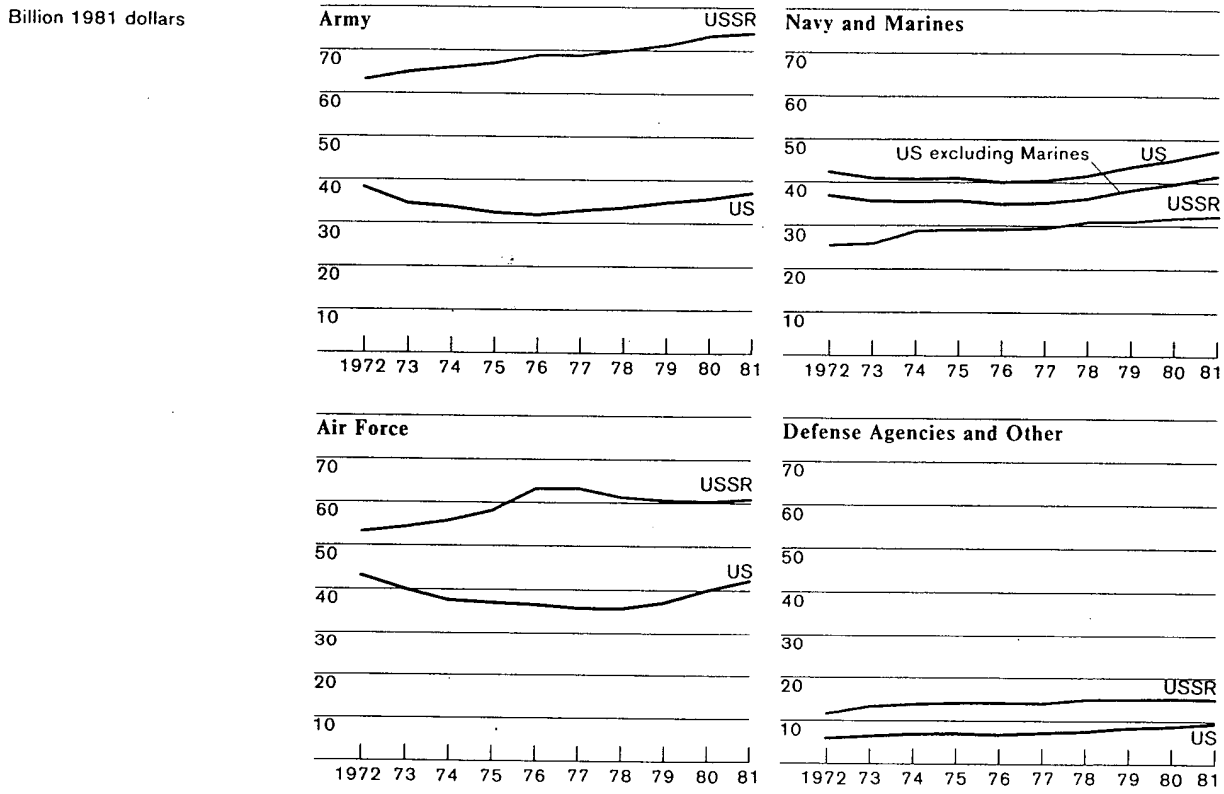
The Soviet Naval Infantry, which is a much smaller organization than the US Marine Corps and has limited functions, is included with the "navy." All Soviet helicopters with a ground attack mission are included in the Soviet "army," although in the United States both the Army and the Marines procure these types of helicopters.

The category "defense agencies and other" includes activities at the Department of Defense or Ministry of Defense level, nuclear weapons procurement and maintenance (most of which is performed in the United States by the Department of Energy), and defense-related activities of the US Coast Guard. Also included are some miscellaneous Soviet activities

	1972	1973	1974	1975	1976	1977	1978	1979	1980	1981	Cumulative
Billion 1981 Dollars											
US											
Army	38.2	34.5	33.8	32.5	31.9	33.0	33.7	34.8	35.7	37.0	345.0
Navy and Marines	42.4	40.9	40.7	40.9	40.0	40.4	41.4	43.6	45.1	47.3	422.7
Navy only	36.9	35.7	35.6	35.8	35.0	35.3	36.2	38.2	39.6	41.5	369.6
Marines only	5.5	5.2	5.1	5.1	5.0	5.1	5.2	5.4	5.5	5.8	53.0
Air Force	43.1	40.0	37.5	36.9	36.5	35.7	35.5	37.0	39.9	42.1	384.1
Defense agencies	5.8	6.4	6.9	7.0	6.7	7.2	7.5	8.3	8.6	9.3	73.6
Total	**129.4**	**121.8**	**118.8**	**117.3**	**115.1**	**116.2**	**118.1**	**123.6**	**129.3**	**135.7**	**1,225.4**
USSR											
"Army"	63.5	65.3	66.3	67.3	69.2	69.1	70.3	71.6	73.7	74.4	690.8
"Navy"	25.9	26.4	29.2	29.5	29.6	29.8	31.3	31.4	32.3	32.7	298.1
"Air Force"	53.6	54.7	56.3	58.6	63.6	63.7	61.7	61.0	60.8	61.9	596.0
"Defense agencies"	12.1	13.8	14.3	14.7	14.7	14.6	15.5	15.6	15.7	15.6	146.7
Total	**155.1**	**160.2**	**166.1**	**170.1**	**177.1**	**177.3**	**178.9**	**179.6**	**182.6**	**184.7**	**1,731.6**

Estimated Dollar Costs by US Service

A comparison of US outlays with estimated dollar costs of Soviet activities



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that we were unable to assign to a specific service. The premilitary training program in the USSR is the most important of these, representing about one-third of the dollar costs of this category. The United States has no premilitary training program of similar scope.

All RDT&E costs are excluded from this comparison, since we are unable to allocate these estimated costs among the Soviet services. Pensions are also excluded. All Soviet military space activities are assigned to the Soviet "air force."

The largest difference is for the "armies." Estimated dollar costs for the Soviet equivalent were twice the US Army outlays over the 1972-81 period. The cumulative dollar costs for the Soviet "air force" were half again as much as US Air Force outlays. However, the costs of the US Navy (and Marines) were more than 40 percent greater than those of the hypothetical Soviet "navy."

The dollar costs of Soviet "army" investment were three times US Army investment outlays, representing the largest difference in resource categories. The dollar costs of "air force" investment for the USSR were twice those of the United States, and investment for the Soviet "navy" was 10 percent more.

Estimated dollar operating costs for the Soviet "army" and "air force" were likewise much greater than the equivalent US outlays. US Navy and Marine operating costs, however, were twice those of the USSR, reflecting the higher operating levels of these US forces.

The dollar costs for all of the hypothetical Soviet services grew an average of 1 to 3 percent per year over the period, but on the US side, only the Navy and Marines showed similar growth. (The defense agencies category is excluded from both sides.) Although they decreased during the middle 1970s, the US Army and Air Force outlays were approximately the same in 1981 as they had been in 1972.

Estimated Dollar Costs by US Service

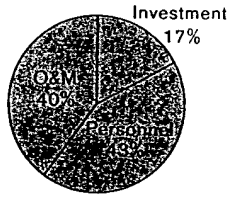
A comparison of US outlays with estimated dollar costs of Soviet activities

Cumulative, 1972–81

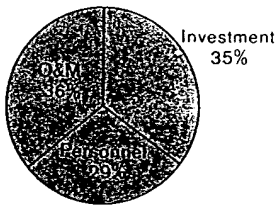
Billion 1981 dollars

US

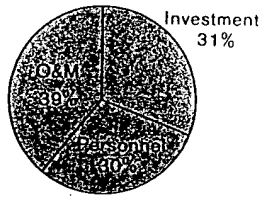
Army
Total: $345



Navy and Marines
Total: $423

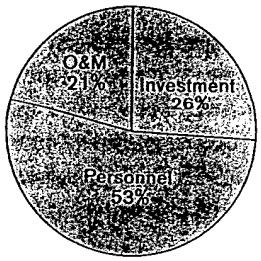


Air Force
Total: $384

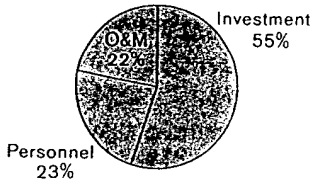


USSR

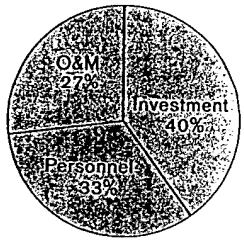
"Army"
Total: $691



"Navy"
Total: $298



"Air Force"
Total: $596



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Military Manpower

The manpower comparisons in this section are designed to cover the same Defense Planning and Programming Categories as the preceding dollar cost comparisons:

- On the Soviet side, this comparison includes personnel in the Ground Forces, Air Forces, Air Defense Forces, Navy, Strategic Rocket Forces, the Border Guards of the KGB, and the national command and support structure.
- On the US side, the manpower total includes all members of the armed forces and most of the Coast Guard.[16]

We include only those Soviet personnel who fill what in the United States are considered to be national security roles. Thus, we do not include Soviet military personnel assigned to the militarized security forces of the Ministry of Internal Affairs, to military construction and railroad troops, or to civil defense troops. These categories total approximately 1.5 million men.[17]

Over the past 10 years, trends for military manpower have paralleled those for total costs in the two defense establishments:

- Estimated Soviet military manpower grew by more than 300,000 between 1972 and 1981—a rate of almost 1 percent per year. We estimate the Soviet manpower level in 1981 was 4.3 million men.
- From 1972 to 1976, US military manpower was still declining from its Vietnam-era peak. The 1972-75 decline amounted to 240,000 men. Since 1976, US manpower levels have been relatively stable at about 2.1 million.

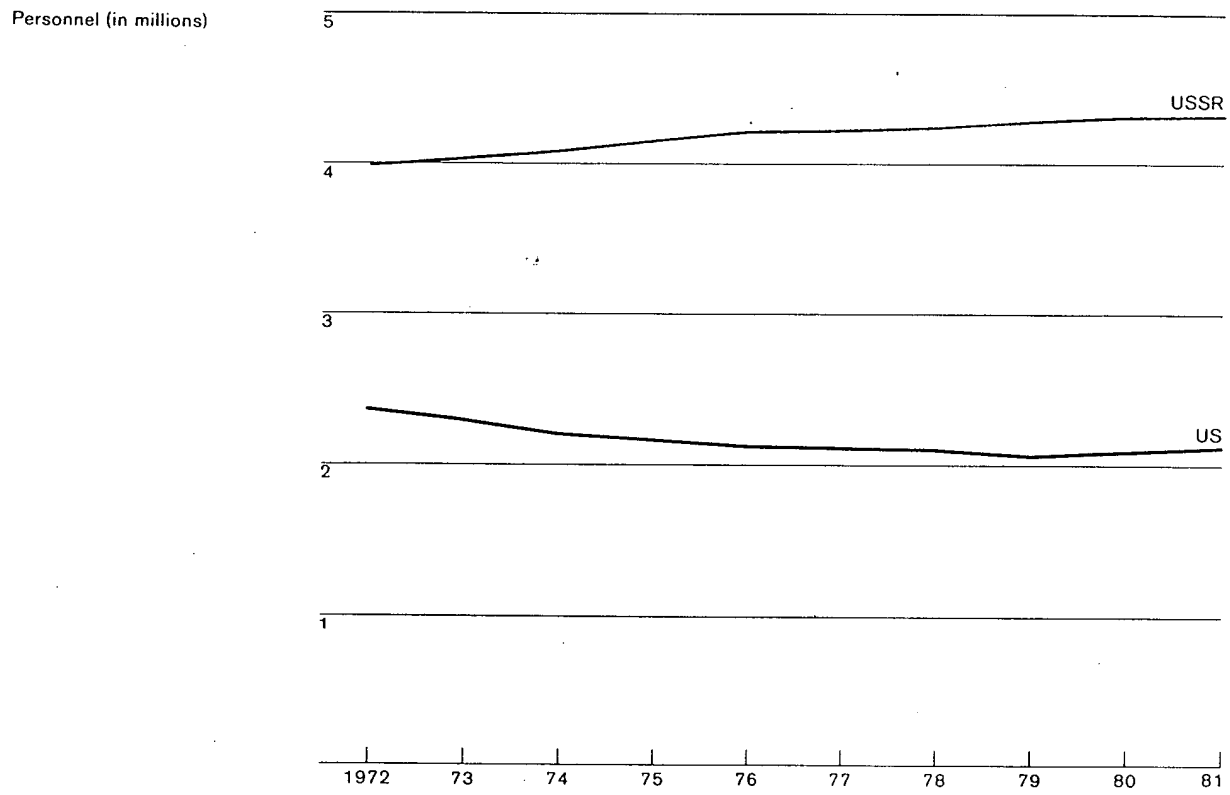
The largest manpower increase in the Soviet military services through the decade was in the Ground Forces. This increase amounted to nearly 300,000 men—an average annual growth rate of 2 percent.

Although the dissimilarities in structure of US and Soviet forces make organizational comparisons difficult, the allocation of manpower to military missions can be roughly compared using the definitions of the US Defense Planning and Programming Categories. The table on page 82 presents these comparisons.

[16] This probably results in an overstatement for the United States, since only those Coast Guard personnel with a military mission should be counted. This breakdown is not available, however.

[17] Our current estimate for these troops is 50 percent higher than we estimated in 1981, primarily because of improved intelligence sources and analytical methods. [redacted] see appendix A to DDI Intelligence Assessment SOV 82-10085 (Secret), June 1982, Soviet [redacted]

Total Military Manpower



Estimates of US and Soviet Military Manpower, 1981 *Thousands* [a]

	US	USSR
Strategic offensive forces	70	270
Intercontinental	70	130
Peripheral	—	140
Strategic defense forces [b]	20	350
General purpose forces	960	1,900
Land	560	1,560
Tactical aviation	170	110
Navy	180	210
Mobility	40	20
Support forces [c]	1,070	1,810
Total	**2,120**	**4,320**

[a] Because of rounding, the components may not add to the totals shown.
[b] Includes the strategic control and surveillance mission.
[c] Includes RDT&E personnel.

The manpower table highlights several differences between US and Soviet military missions:

- The Soviets have a large peripheral strike force composed of medium- and intermediate-range ballistic missiles, long-range bombers, and the older ballistic missile submarines. The United States does not have a comparable mission defined by the DPPC.

- The Soviets commit a large force of men and equipment to defense against air and missile attack. The 350,000 troops in this mission are assigned to interceptor, surface-to-air missile, antiballistic missile, and control and warning forces. The United States has only a small force dedicated to this mission.

- Soviet general purpose forces are twice as large as those of the United States. The land forces, which are nearly three times as large as the US counterpart, account for this difference.

There are also similarities in the shares of manpower allocated to the missions shown in the table:

- Intercontinental attack forces require approximately 3 percent of total manpower in each country.
- Support forces account for about one-half of US manpower and more than 40 percent of the Soviet total.

Confidence in Manpower Estimates

We calculate our total manpower figure by making separate estimates for each of the individual Soviet forces. These individual manning estimates are produced by a variety of methods, including order-of-battle studies, information from human and technical sources, photographic interpretation, and statistical sampling techniques. We believe our estimate of the overall force size is accurate within 10 percent.

A study made in 1980 of the military service experience of approximately 13,000 male from the Soviet Union provides the first independent check on our total manpower estimates. Its results support our assessment that the estimate is in error by no more than ±10 percent.

Soviet Conscription Trends

The data also show how the Soviets have adjusted their conscription system to balance the military demand with the changing size of the draft-age population. They show that the length of service has varied widely since 1950, when the average conscript served over six years. The average term dropped below three years in the mid-1950s and rose again in the early 1960s to compensate for manpower shortages. Since then, conscripts have typically served only the term required by Soviet law—three years before 1967, two years thereafter.

Our estimates of military manpower suggest that by 1985 the Soviets will face a significant manpower shortage. We estimate that conscription rates are currently near the maximum supportable in the Soviet system. Lending support to this conclusion is the almost complete elimination of draft deferments for higher education early in 1982. Because few Soviet high school graduates go on to higher education, however, this measure affords only temporary relief from the worsening manpower shortage. We expect further steps to be taken within the next few years; a six-month extension of the term of service (to two and a half years) is the most likely.